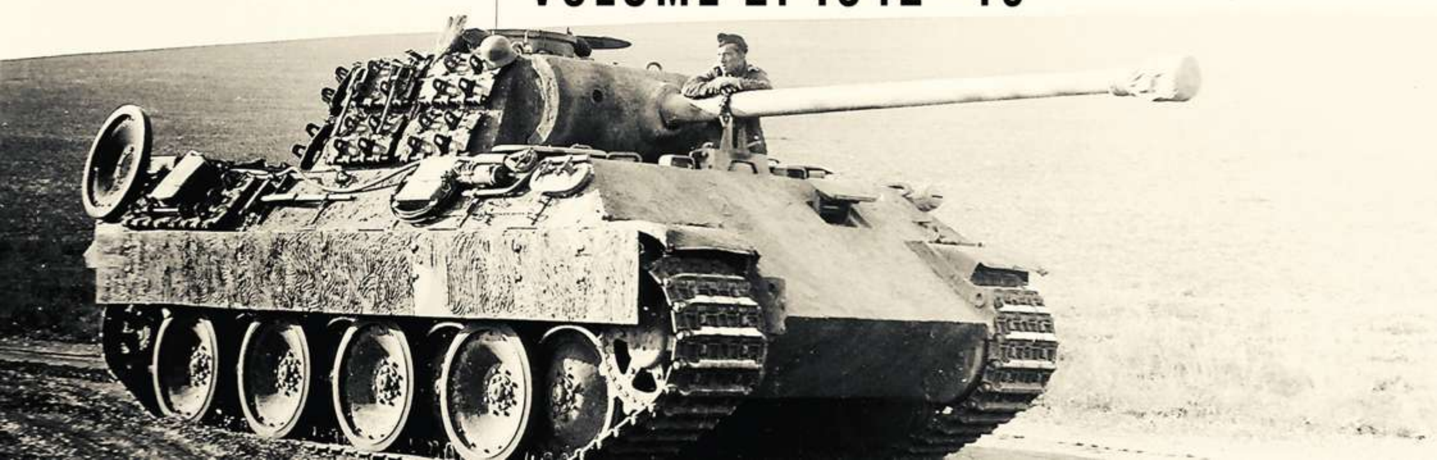
Thomas Anderson

THE HISTORY OF THE PANZERWAFFE

VOLUME 2: 1942–45



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VOLUME TWO 1942–1945

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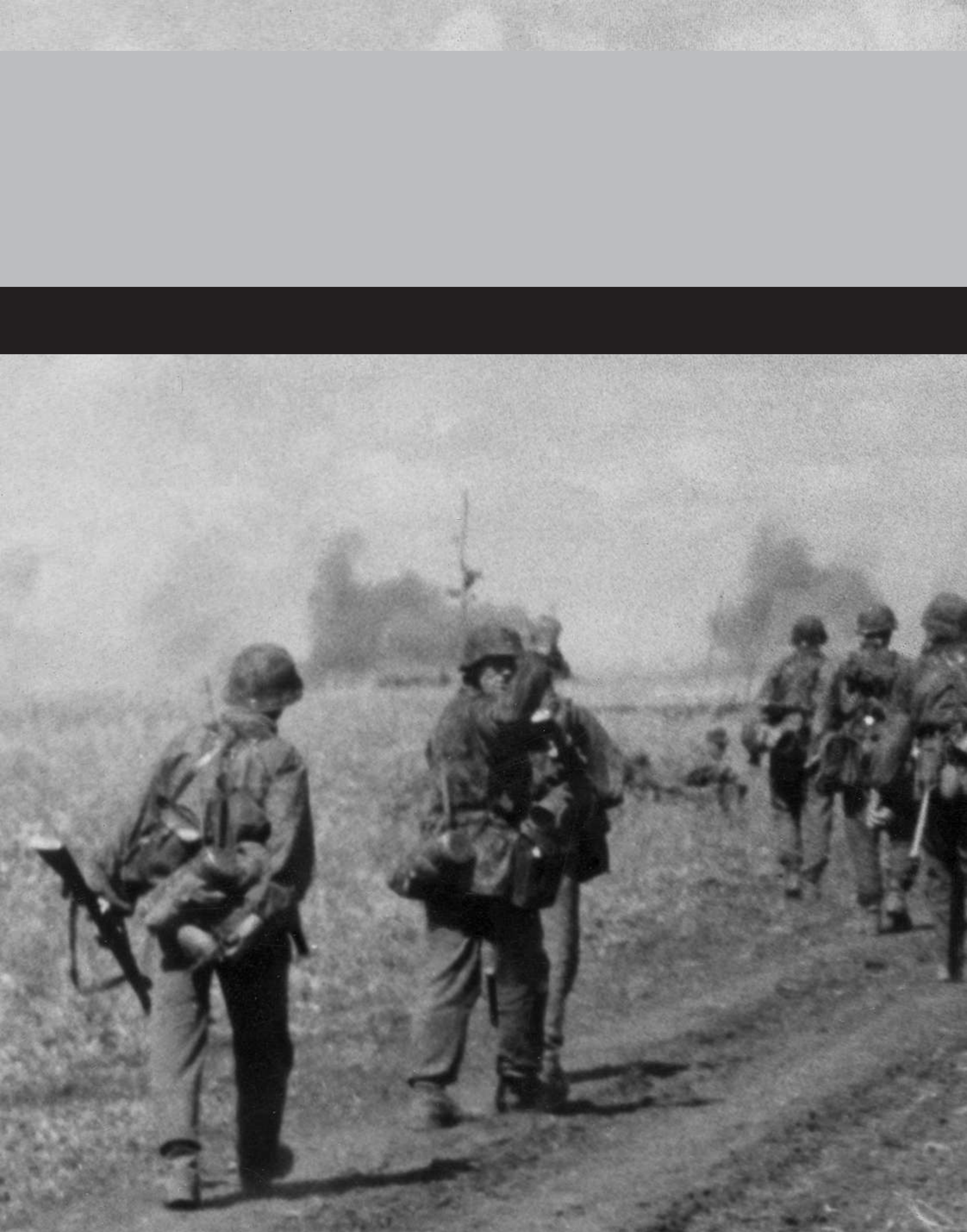

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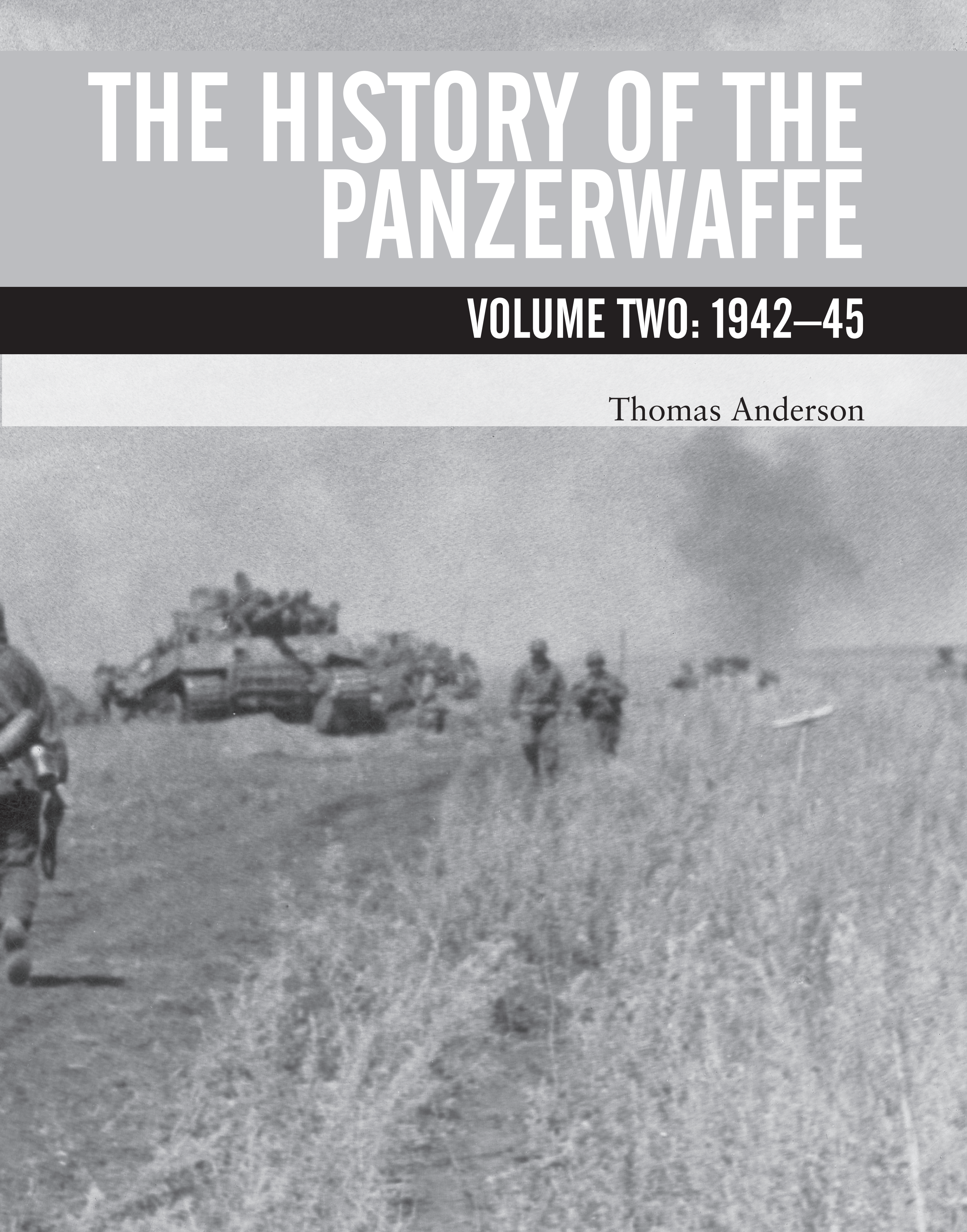

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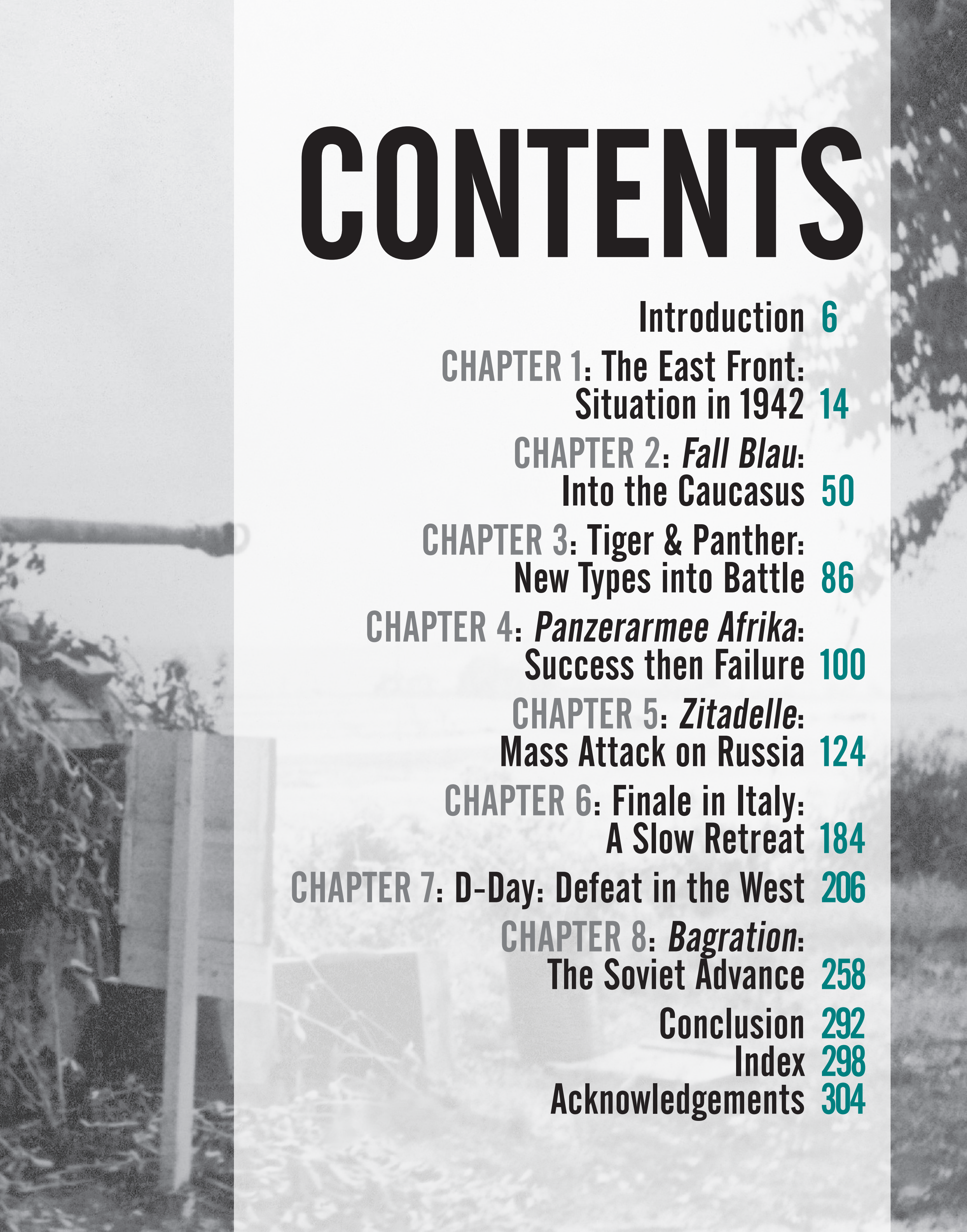

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INTRODUCTION

Unternehmen (Operation) Barbarossa, the German land invasion of Russia on 22 June 1941, was the culmination of Hitler's policy to expand the influence of the Reich by using military force. Like Napoleon, another ruthless aggressor who attacked this vast country 129 years earlier, he also ignored the landscape and the effect of weather conditions on advancing mechanized forces. Hitler also ignored that the Soviet Union had vast industrial facilities and an almost limitless supply of manpower.

Military historians continue to argue as to when Germany exactly lost the war. Three opinions as usually offered: The inability to take Moscow, the Russian capital; the first major defeat at Stalingrad in 1942; or the Battle of Kursk in 1943, where the army lost its tactical advantage. The final answer is inconclusive, as too many details and actions conflict.

In 1939, German military forces – *Panzerwaffe* and *Luftwaffe* – had invaded large parts of Europe culminating in the fall of the arch enemy, France. Great Britain was the last remaining opponent in the west, and Hitler had made plans to attack with an amphibious landing, *Unternehmen Seelöwe*. However, this had to be postponed after the air assault by the *Luftwaffe* failed to overcome the Royal Air Force during the Battle of Britain. At least the operations in the Balkans and also North Africa, which Hitler imposed on the German general staff, achieved some success. Even if in the case latter this was only short-term.

When he ordered the attack on the Soviet Union, Hitler aimed to achieve his greatest goal – the expansion of the Reich to the east and the

Left:
The commander of a PzKpfw VI Ausf E Tiger from 13.PzRgt Grossdeutschland prepares to fire a flare from a *Signalpistole* (SP) 42 for the benefit of a propaganda photographer. The *Leutnant* wears a *Ritterkreuz* (Knight's Cross) and a *Panzerkampfabzeichen* (tank combat badge). (Getty)

Above:
Russian peasants watch a German tank column passing through their village during the grim winter of 1941/42. On the eastern front, a PzKPfgw III Ausf J armed with the 5cm KwK L/42 could not defeat the latest versions of the Soviet T-34 and KV tanks. (Anderson)

extermination of Marxism. Hitler had ordered preparations for this immense operation in 1940, and also the preliminary planning for *Unternehmen Seelöwe*. But, at that time he was hoping for the British government to agree a separate peace.

The *Wehrmacht*, *Panzerwaffe* and *Luftwaffe* had been victorious in all these operations, and commanders had used them as one coordinated force on the battlefield to achieve the effective lightning (*Blitzkreig*) strike. However, the first part of Hitler's master plan failed at the end of 1941.

Stalemate in snow and desert dust

While the Panzer force was certainly the most effective and efficient battle-winning invasion force, it certainly could not operate without artillery support or air superiority.

However, Guderian's tank forces were the first to smash through the fortifications of the Low Countries and then France. By using superior tactics on the *Ost* (east) front, his tanks Panzer destroyed hundreds of Soviet tanks albeit manned by badly trained and poorly led, but brave soldiers. So great was their tactical superiority, that even the sudden appearance of more sophisticated equipment, such as the T-34, did not alter the course of the battle.

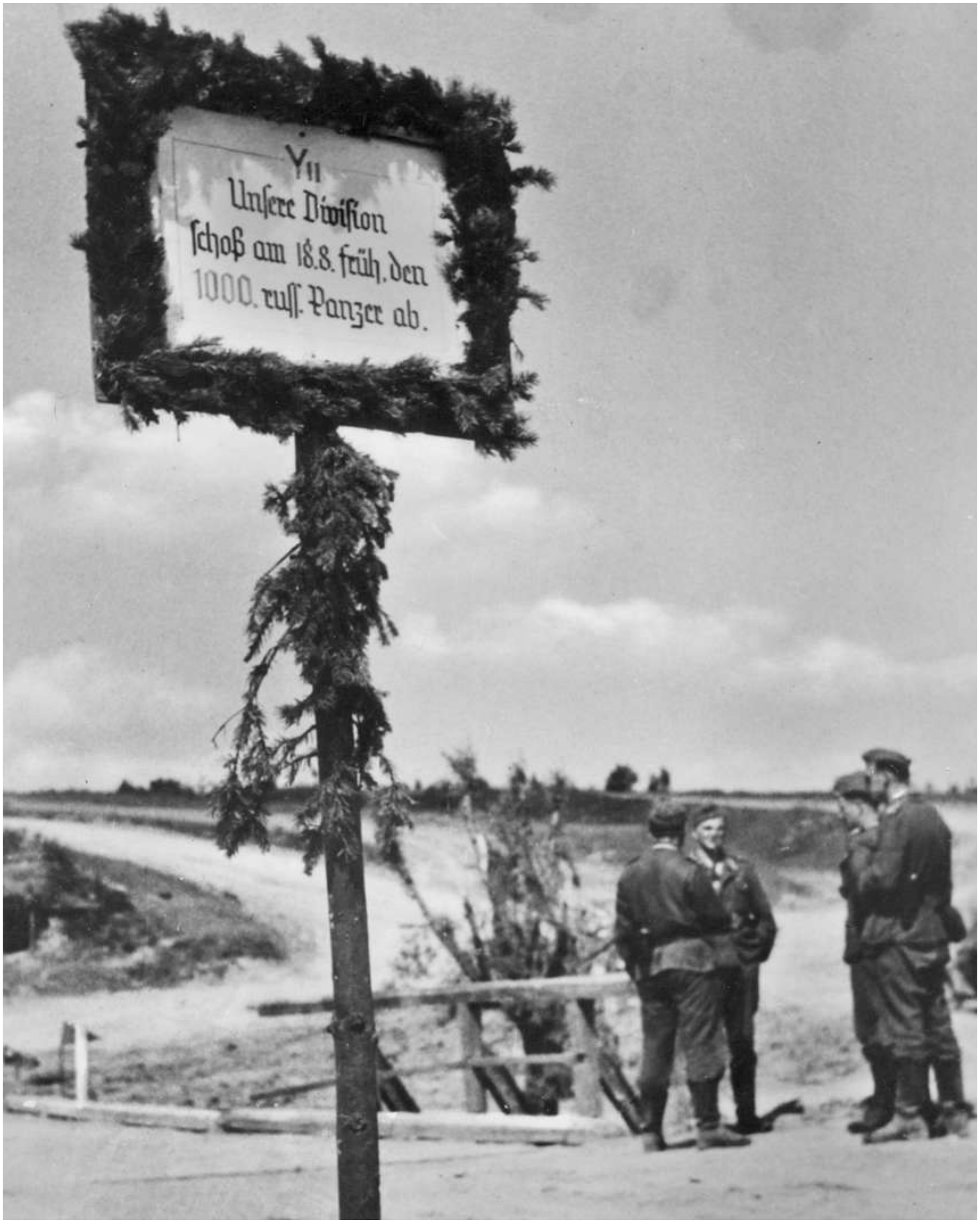
In 1941, as autumn ended, weakened and exhausted German troops were first faced with deep mud, which made any movement almost impossible; if tracked vehicles were able to move but with some difficulty, all conventional supply vehicles were not. The first frosts of winter brought temperatures of below -30°C, and the attack on Moscow, which Hitler considered to be decisive, collapsed.

How did the Panzers perform as the war continued over the next four years; were German commanders capable of adapting their tactics and strategy to meet the severe dilemmas they were to face in both North Africa and Russia. Finally, would it be possible for the German armaments industry to develop superior weapons and deliver them in sufficient numbers to maintain superiority on future battlefields.

A few words about tactics

The reader will notice that I make mention of 'superior German tank tactics', without providing any further detail, as this is beyond the scope

Below:
The introduction of the long-barreled 5cm KwK L/60 came too late for tank crews fighting on the eastern front. Although the weapon had a reasonable armour-piercing performance, it was not the weapon German tankers had waited for to fight T-34 and KV tanks. However in the desert war, the gun did perform well against Allied armour up until early summer 1942. (Zöllner)


Unſere Diviſion
ſchoß am 18.8. früh, den
1000. ruſſ. Panzer ab.

Above: A shield of honour was erected on 18 August 1942 by 9.PzDiv to celebrate the destruction of the 1,000th enemy tank. The German propaganda machine was always keen to report of any such success, and this would be published to boost the morale of other troops and the civilian population. (Anderson)

of this book. Tactics are described in many German training manuals many of which I have carefully read, but these contain only theoretical knowledge; only hard reality on the battlefield will combat tactics evolve in the reality of the situation. The 'starting position' of an attack is influenced by a great number of facts, and a commander would always request a full reconnaissance of the terrain and enemy positions before launching an attack. During the mission, his evaluation of the tactical situation would continuously as the battle progressed.

No handbook or training manual can prepare a soldier to the actual reality of the battlefield.

An exact explanation of 'Panzer' tactics would require an author to evaluate, in detail, each specific combat mission, by using war diaries and official after action reports (not personal recollections). Having read a significant number of such documents, I can only summarize what I have learned in regard to German tank tactics: Attack with determination, and use elements of your forces to best effect.

Above:
Tanks are designed to negotiate rough terrain. However conditions on the eastern front; the dust of the long, dry summer gave way to long periods of heavy rain in autumn followed by severe frost then deep snow in winter and then the spring thaw would turn the ground into an impassable *Raputitsa* (sea of mud). All of which seriously affected tank operations. (Zöllner)

Above:
The PzKpfw VI Tiger changed the balance of power on the eastern front. Armed with an 8.8cm KwK 36 L/56 and having almost impenetrable frontal armour, it was far superior to all Russian-built tanks of 1943. This vehicle is from s PzAbt 503, and the turret number '114' indicates that it was commanded by Alfred Rubbel, who was to become a tank ace. (Rubbel)

Author's Note

As in *Panzerwaffe* Volume 1, I have used information gathered from researching original German official documents, which also contained much of the technical data (for Allied equipment I have had to refer to published material) included in this book. I also believe that official after action reports, prepared by officers in the field or higher command echelons (including the *General der Panzertruppe*) have great credibility, and subsequently are of high informative value.

Reports such as these can only be found in archives, such as the National Archives & Records Administration, Washington, DC; the Bundesarchiv-Militärarchiv, Freiburg, Germany and both are open to the public.

I have not detailed individual tank battles or campaigns, as other authors have covered these more than adequately and will again as more information is uncovered when archives make more documentation available to researchers. Also on matters technical, respected authors including Walter Spielberger, Tom Jenz, Hilary Doyle and Peter Müller have comprehensively covered the 'nuts and bolts' and production data for World War II German armour.

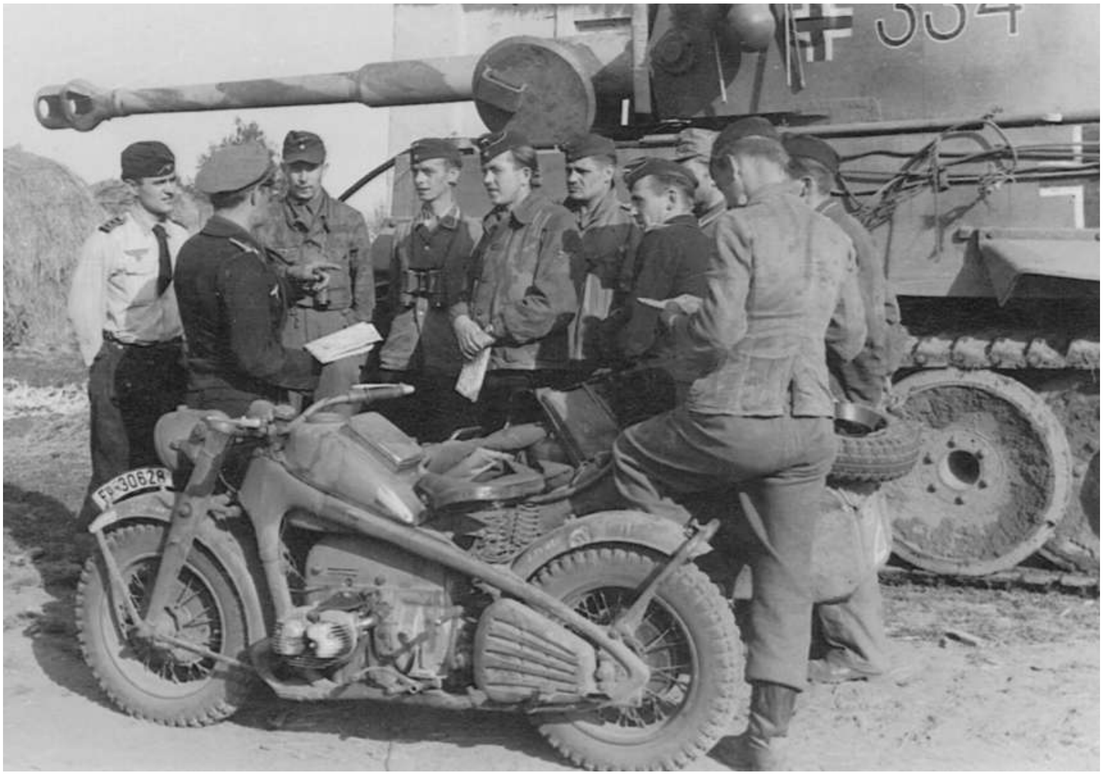
The naming of German weapons, vehicles and tanks again follows the more or less clear German classification: A tank is a *Panzerkampfwagen* (PzKpfw); an armored car a *Panzerspähwagen* (PzSpw); an armoured half-track vehicle a *Schützenpanzer* and a half-track vehicle a *Zugkraftwagen* (ZgKw). Many were also classified with a *Sonderkraftfahrzeug* (SdKfz) special-purpose motor vehicle number. This strict naming and numbering was possibly a result of a certain German, or Prussian tradition – discipline, exactness and (sometimes) slavish obedience.

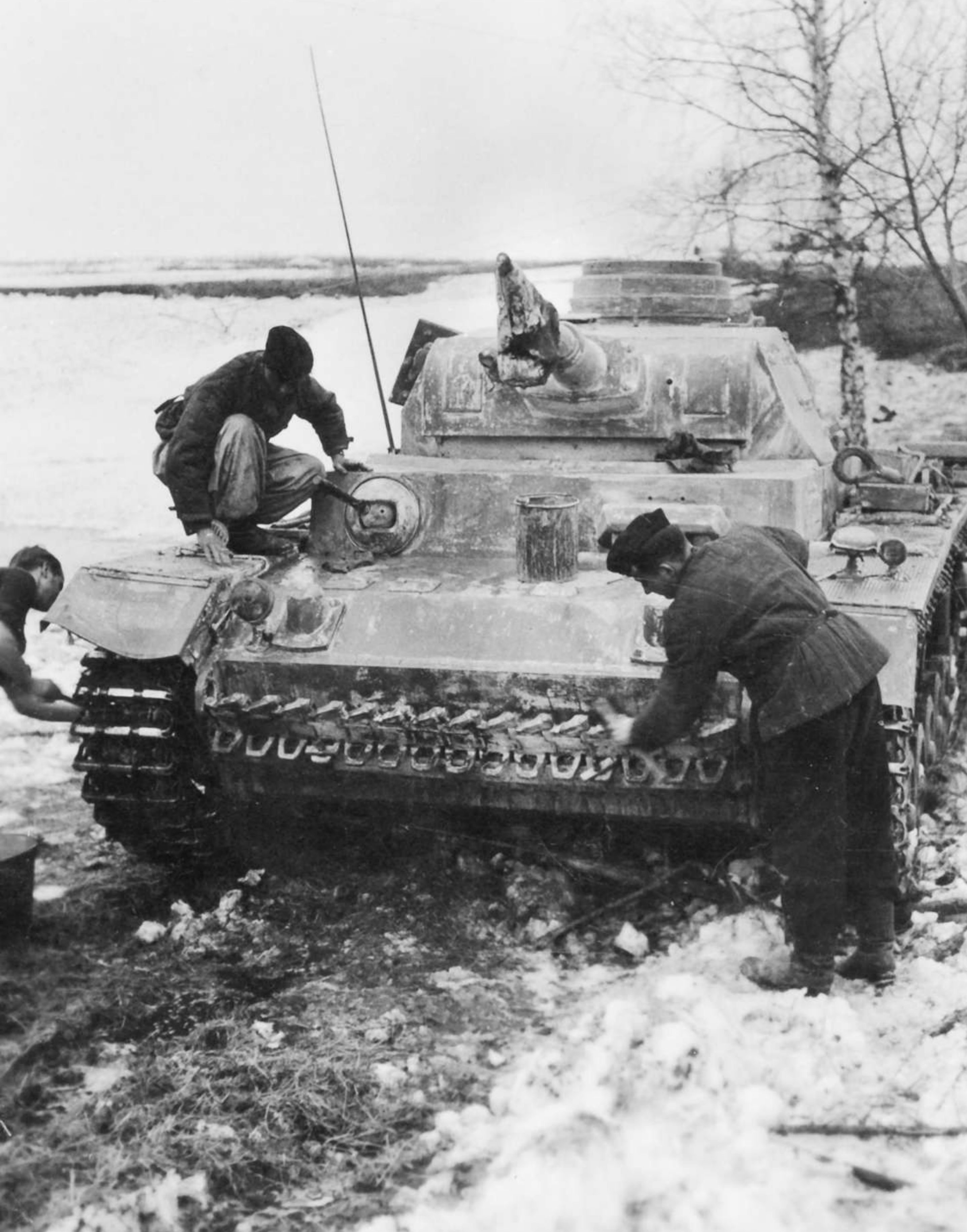
However, in service a battalion commander on the frontline would use a different designation to that used by his technical officer. For instance, a PzKpfw IV was normally referred to as the Panzer IV, or simply Pz IV, and the production variants identified by *Ausführung* (Ausf – Model – Mark [Mk]) and a letter (A, B, etc.). But these would be irrelevant to the commander, only the technical officer would have required such details supported by the chassis number of a vehicle. All this changed when the long-barreled 5cm and 7.5cm guns were introduced; subsequently, the terms *Langrohr* (long barrel) and *Kurzrohr* (short barrel) would have to be added when identifying the exact model (mark) of tank. However, a busy unit commander would have used the simple suffixes k (kurz – short) and l (lang – long) when compiling his reports

I have used the naming as found in official reports, government orders, and correspondence between the manufacturers and government officials: But most importantly, in after action reports prepared by front-line commanders.

Thomas Anderson
December 2016

Below:
A dispatch rider has delivered orders to the commander of a PzKpfw VI Tiger from s PzAbt 503. The Zündapp ZS 750 motorcycle and side car (combination) was first issued to the *Wehrmacht* in 1940 and remained in service until the war ended. Note the machine has a registration number beginning with the letter F; very odd. (Rubbel)





CHAPTER 1

THE EAST FRONT: SITUATION IN 1942

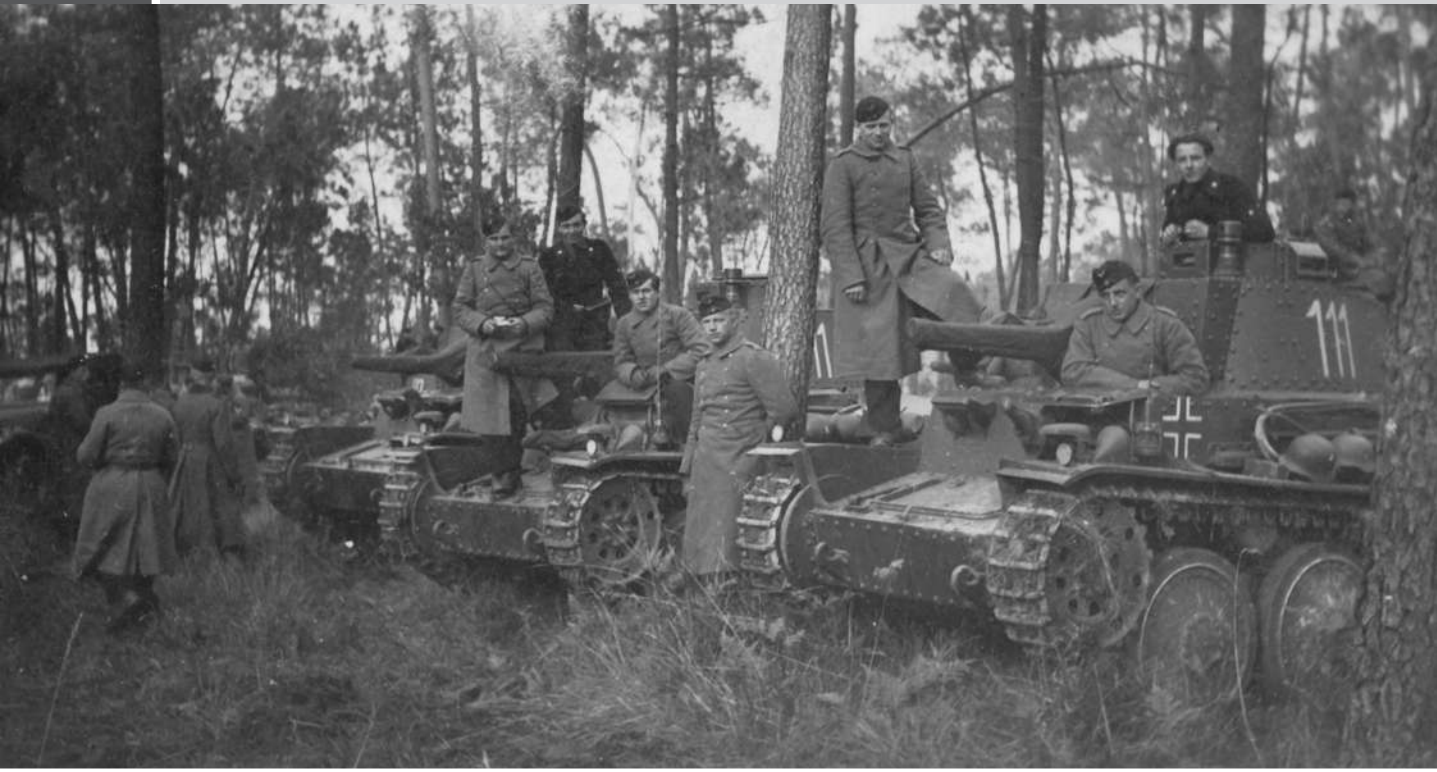
During 1941, the German advance into the Soviet Union seemed to be unstoppable. In Western Europe, the United Kingdom (UK) was the only nation to remain unconquered. Now the adversaries of Germany, as ideologically and politically different as they were, formed an alliance with the common aim of 'the complete destruction of Hitlerism'. The Soviet Union, the United States of America and the UK agreed not to negotiate a separate peace treaty with Germany, but while the final aim was clearly defined, there was division as to how this should be achieved.

The UK had declared war with Germany on 3 September 1939, and although the Royal Air Force (RAF) had defeated the *Luftwaffe* in the Battle of Britain the island nation faced the threat of an invasion from across the English Channel. British troops were fighting Axis forces a long way from home in North Africa, which encouraged the government to seek any way of weakening the strategic capability of Germany.

The Soviet Union had been on the edge of total defeat at the end of 1941, and demanded that their 'new' Allies prepare a comprehensive military aid package. Among the demands, the Soviets promoted the opening of a second front in occupied Europe to stretch German forces and relieve pressure on their front. The United States, which had entered the war on 8 December 1941 after the Japanese attack on Pearl Harbor, agreed and supported the planning of a large-scale landing in northern France as a determined attack on Germany.

In early 1942, military planners in the UK had persuaded their American counterparts that a landing on mainland Europe was not feasible in the near future, but did agree to the preparation of a two-fold strategy. Acquiescing to the wishes of the British, US forces would land (Operation Torch) in North

Left:
As *Unternehmen* (Operation) Barbarossa ran on into the winter of 1941, it became essential to camouflage the grey-painted tanks of the *Panzewaffe* to blend in with the snow-covered landscape. The crew of a PzKpfw III Ausf J (5cm KwK L/42) is removing a coating of water-soluble whitewash paint at the start of the spring-time thaw in 1942. (Anderson)



Above:
In 1942, many German units were still equipped with the 3.7cm-armed PzKpfw 38(t). Originally supplied with French *Beutepanzer* (captured tank), PzRgt 204 was later re-equipped with German tanks when attached to the newly established 22.PzDiv. (Anderson)

Africa, on 8 November 1942, with the aim of defeating the *Panzerarmee Afrika* (Tank Army Africa). The second part of the agreed strategy was a large-scale bombing campaign by the RAF beginning on 28 March which, after 12 May 1942, would be supported by the US Eighth Air Force operating from bases in the UK. The plan was to severely disrupt or destroy industry and infrastructure; such raids were also designed to demoralize the German population.

The US and Canada began to deliver weapons, raw materials and other supplies under the Lend-Lease Act which had been proposed in late 1940 and signed on 11 March 1941. The Lend-Lease Program would turn out to be vital to arm and feed the UK, and essential for the survival of the Soviet Union.

Although Allied forces were involved in heavy fighting across North Africa, it was the Soviet army that had to carry the heaviest burden, that of halting the relentless advance by German forces.

On 12 December 1941, Soviet forces in Moscow launched a counter offensive which by 7 January 1942 had pushed exhausted German forces 100 to 200km away from the city; by May 1942, *Heeresgruppe Mitte* (Army Group Centre) had been forced to retreat to Ržev in the northern sector, and to positions near to Kaluga and Orel to the west of Moscow. Soviet troops achieved a significant gain to the southwest of Demyansk, by advancing to Vitebsk and Smolensk.

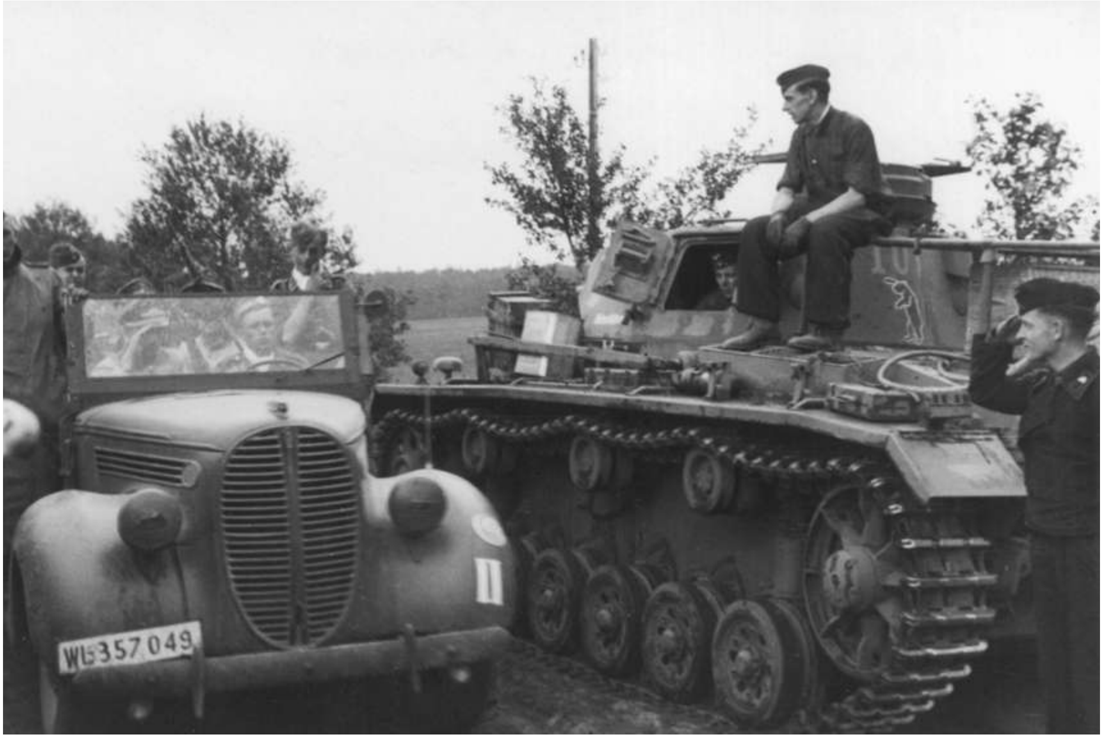
However, the strategic situation remained difficult. *Heeresgruppe Nord* (Army Group North) had reached Leningrad and began a siege of the city which was to last until 19 January 1944. In the south the Crimea was invaded, and Soviet forces secured a a line from Orel, Belgorod to Rostov.

Cold and snow - the state of the *Panzerwaffe*

The army groups *Heeresgruppe Nord* and *Mitte* published a strength report (*Panzerlage* – tank situation) on 22 December 1941 (for unknown reasons, the list does not show the strength of *Heeresgruppe Süd* [Army Group South]). The list shows the desperate situation for vehicle availability caused not only by battle losses, but also by the severe winter conditions. The lack of spare parts impeded repair work significantly, this is evident by the disproportionate number of those requiring repair against the tanks available for operations:

Panzerlage HG *Nord* and *Mitte*, 22 December 1941	Operational	Short-term repair
PzKpfw II	60	188
PzKpfw III	180	254
PzKpfw IV	75	136
PzKpfw 38(t)	84	202

Below:
Equipped with long-range radio equipment, *Panzerbefehlswagen* (command tanks) were an important part of a tank unit. Note the attacking bear emblem of PzRgt 35 on this PzBefWg Ausf H operated by the commander of I. *Abteilung*. Barely visible under the open hatch a crewmember has painted ‘*Bärenführe*r’ (bear’s leader). (Hoppe)



However, the severe winter conditions also impeded operations by Soviet forces, as all fronts became frozen solid. In January 1942, 1.PzDiv reported as having only one tank operational and nearly all the tank units of *Heeresgruppe Mitte* were exhausted.

In December 1941, 5.PzDiv, with a full establishment of 186 tanks, was sent to reinforce *Heeresgruppe Mitte*. Within six weeks, the division had lost some 40 percent of its tanks, but did manage to remain fully operational.

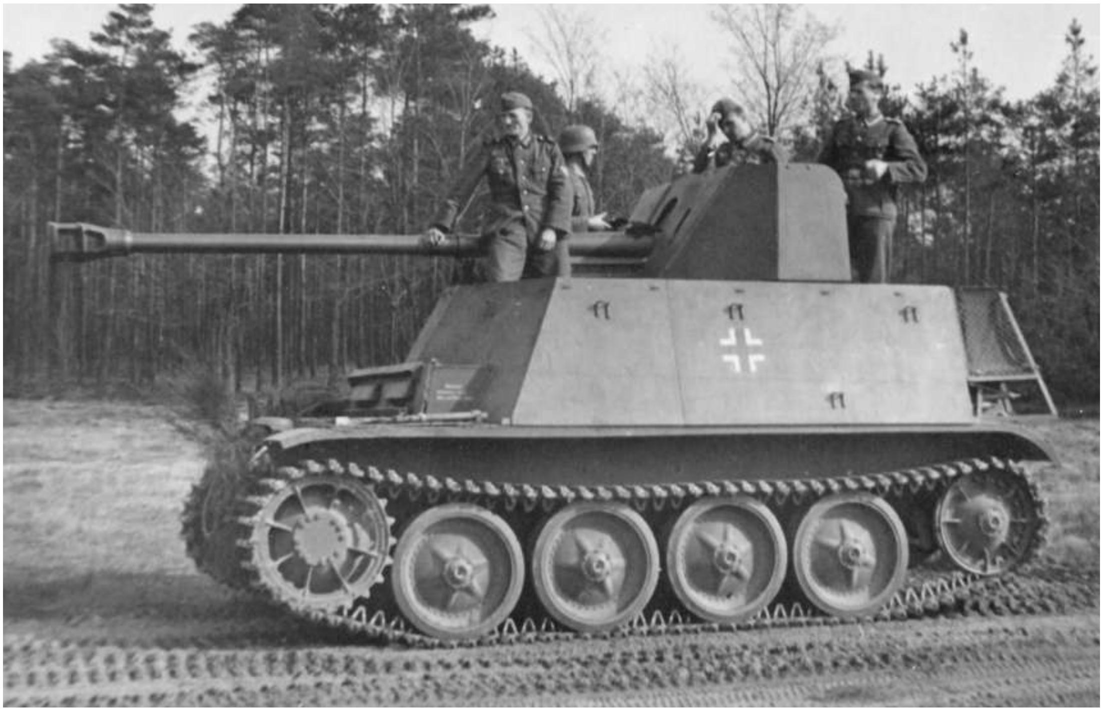
Panzerlage 5.PzDiv	December 1941	February 1942
PzKpfw II	55	18
PzKpfw III (5cm)	71	38
PzKpfw IV	20	14
PzBefWg	6	7

It was the duty of the *Waffenamt* (ordnance department) to maintain a list detailing the production and numbers of tanks allocated, plus losses of combat vehicles. The lists *Überblick über den Rüststand des Heeres* (survey regarding the arms status of the army) were maintained monthly until 1943, when Heinz Guderian, the *Generalinspekteur der Panzertruppen* (GenInspdPzTrp) assumed responsibility.

Survey Arms Status of the Army, 1 February 1942

	Inventory	Supply of new tanks	Supply of repaired tanks	Losses
PzKpfw I	708	0	7	22
PzKpfw II	800	29	39	76
PzKpfw II Flamm	89	1	0	0
PzKpfw 35(t)	201 (?)	0	4	0
PzKpfw 38(t)	424	59	74	31
PzKpfw III (3.7cm)	157	0	0	17
PzKpfw III (5cm)	1630	159	136	181
PzKpfw IV	530	59	65	48
PzBefWg command tanks, all	289	14	20	38
Sturmgeschütz	605	45	33	53
4.7cm PaK(t) auf PzKpfw I	206	0	0	15
4.7cm PaK(t) auf PzKpfw R35 (f)	200	0	0	0

A close examination of the summary in the table (vehicles only relevant to this book are shown) is interesting. The figures show armoured fighting vehicles in stock on all fronts and with the replacement units. The complete



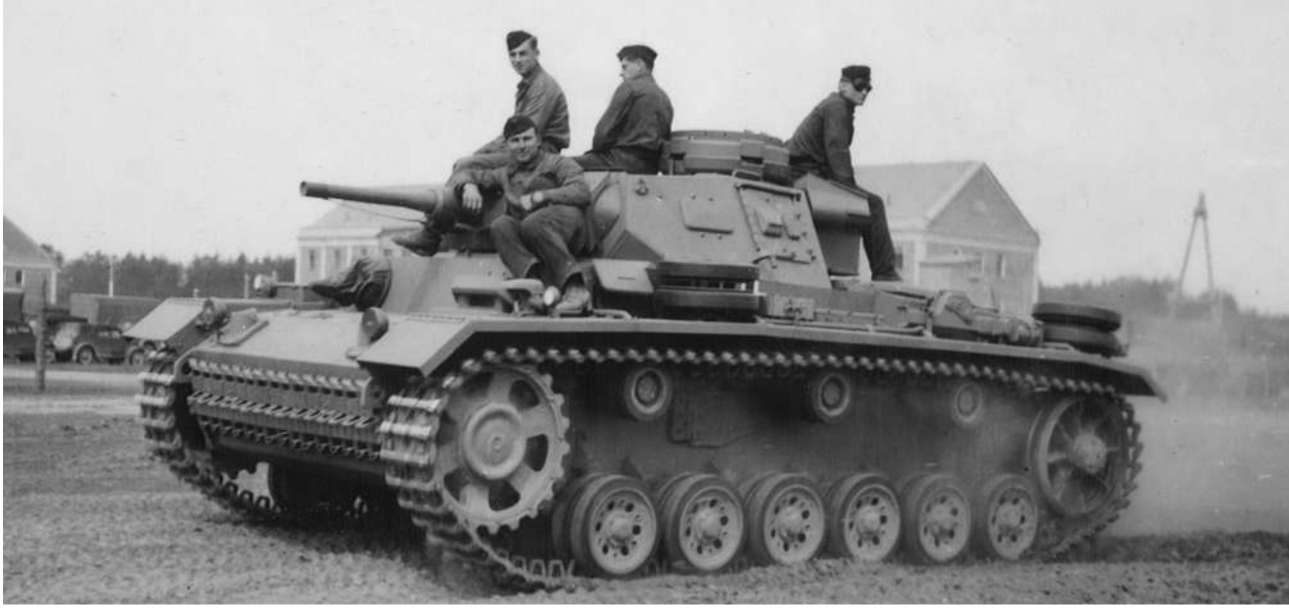
Above:
After being confronted by the superior Soviet-built T-34 medium and KV heavy tank, German military planners were forced to issue effective tank destroyers. Since large numbers of Soviet 76.2mm field guns had been captured during the first months of the invasion, it was decided to rechamber these weapons to fire German PaK 40 ammunition for installation on an available tank chassis. Shown is a Pz *Selbstfahrlafette* (Sfl – self-propelled – SP) I, mounting a 7.62cm PaK 36[r] on a PzKpfw II chassis. (Anderson)

number (included are 400 *Selbstfahrlafette* [Sfl – self-propelled – SP] 4.7cm PaK[t] guns) amounted to some 5,600. However, beside SP guns many vehicles of limited or insignificant combat value were also listed. The number stated for the PzKpfw 35(t) is surprisingly high, and cannot be explained. PzRgt 11 of 6.PzDiv, the only unit to be equipped with the PzKpfw 35(t), lost all of its tanks during the fighting around Moscow; parts of the unit were then deployed in the infantry role. After the frontline became stabilized, the unit was moved back to its home base for rest and then re-established with German equipment. It is possible that this high number was the total production run of the Czech-built LT vz 35 (over 400 built, of which some 200 were supplied to Panzer units).

Out of the total number of tanks available, only the PzKpfw III armed with the 5cm L/42 and the PzKpfw IV (7.5cm KwK L/24) were able to fight against Allied tanks in the North African desert or the superior Russian tanks.

Adjusting the tactics

In early 1942, PzRgt 33 fought on the eastern front as part of *Heeresgruppe Mitte*. On 2 February, the regiment submitted this experience report. What appears to be a random series of topics was due to a questionnaire issued by *Heeresgruppe Mitte*.



Above:
In early 1942, the majority of PzKpfw III tanks were armed with the 5cm KwK L/42 gun. Although comparable to British tank guns then in service, it proved to be unable to stop either a T-34 or the KV even at very close range. Shown is a newly-delivered PzKpfw III Ausf J in service on the eastern front. (Anderson)

1.) Suitability of the tactical principles

The basic principles of the HDv 470/1 “Preliminary directives for control and fighting by the *Panzerregiment* and *Panzerabteilung*” did work in general.

Proposal:
As long as it is impossible to assign a *Panzerbrigade* to the *Panzerdivision*, the *Panzerregiment* should be divided in three *Abteilungen*.

Reason:
In general the *Panzerdivision* fights with two *Kampfgruppen* [battle groups]; each of which is supported by a *Panzerabteilung* [tank battalion].

The third *Abteilung* could be used for:

a. reinforcing the advance units
b. protecting the flanks
c. reinforcing newly established focal points
d. combating enemy forces in the rear of own troops
e. establishment of a combat reserve.

2.) Tanks in the defence:

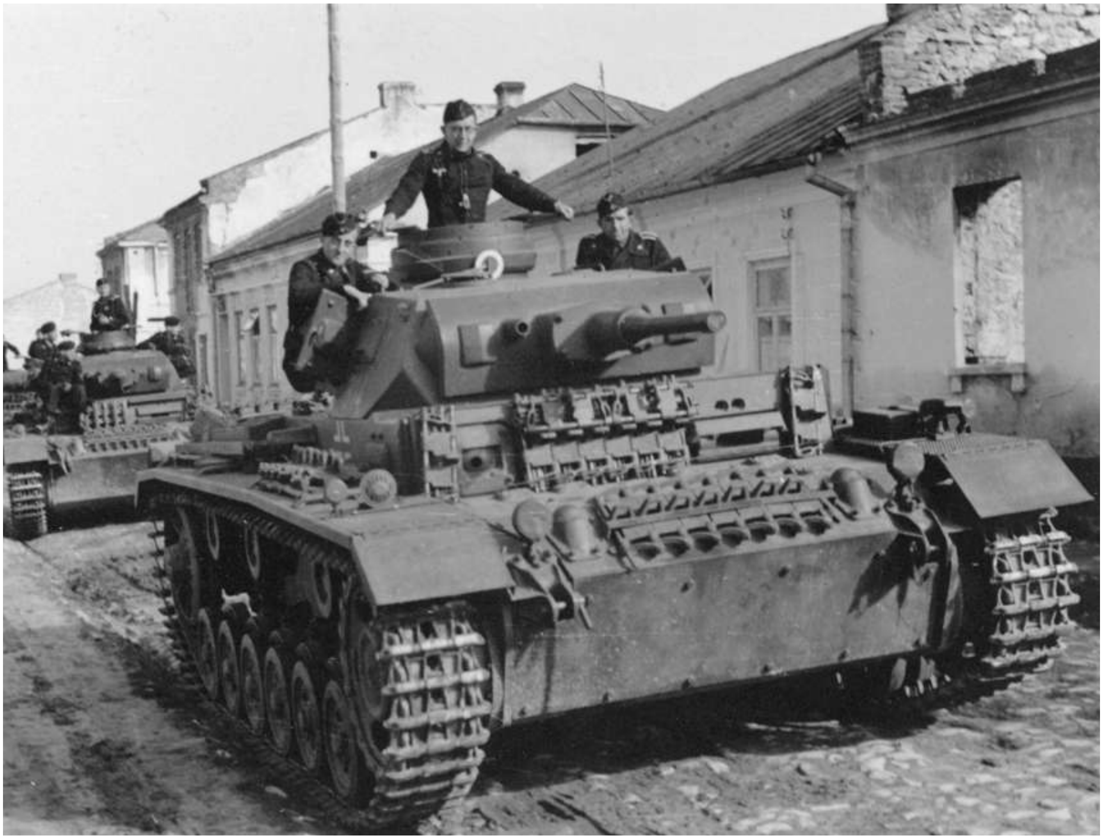
Tanks used on the defensive must remain as a mobile reserve behind a broad line of security.

Task of the tanks:
Attack and annihilate enemy forces which have broken through; or to advance against known enemy assembly positions operating in close cooperation with our *Schützen* (motorized infantry). In both cases the attack must have limited objectives.
When moving back, tanks shall fight as a rear guard; limited local thrusts are to be used to enable the retreat of our motorized infantry and artillery.

3.) Measures to be taken by regimental leadership during defence and retreat:

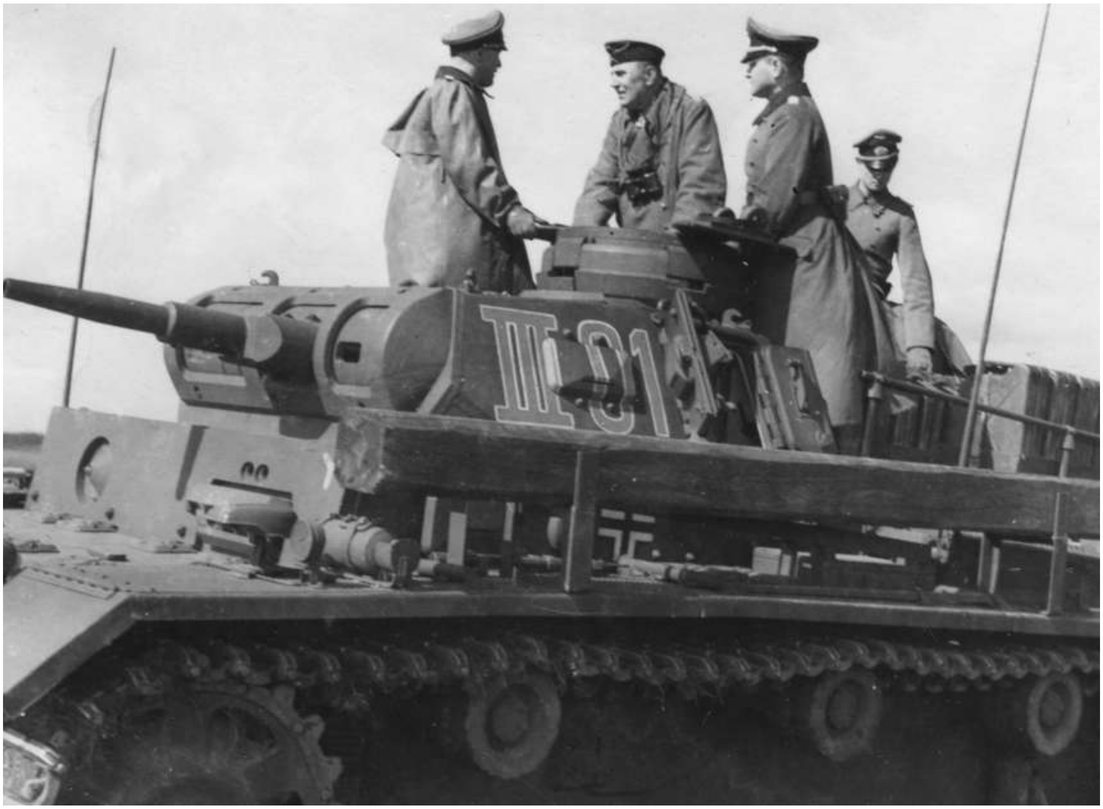
Vehicle convoys have to be ordered to move early enough in order to avoid congestions and to get clear of the enemy swiftly.
The recovery section has to remain near the combat echelons. The *Sonderanhänger* [SdAnh 116] flatbed trailer is unsuitable as loading will cause loss of time. All recovery means have to be used. Importantly, tanks have to be utilized to haul broken-down tanks. In open terrain they have to wait for nightfall. If necessary, [operational] tanks have to be allotted to protect the recovery section.

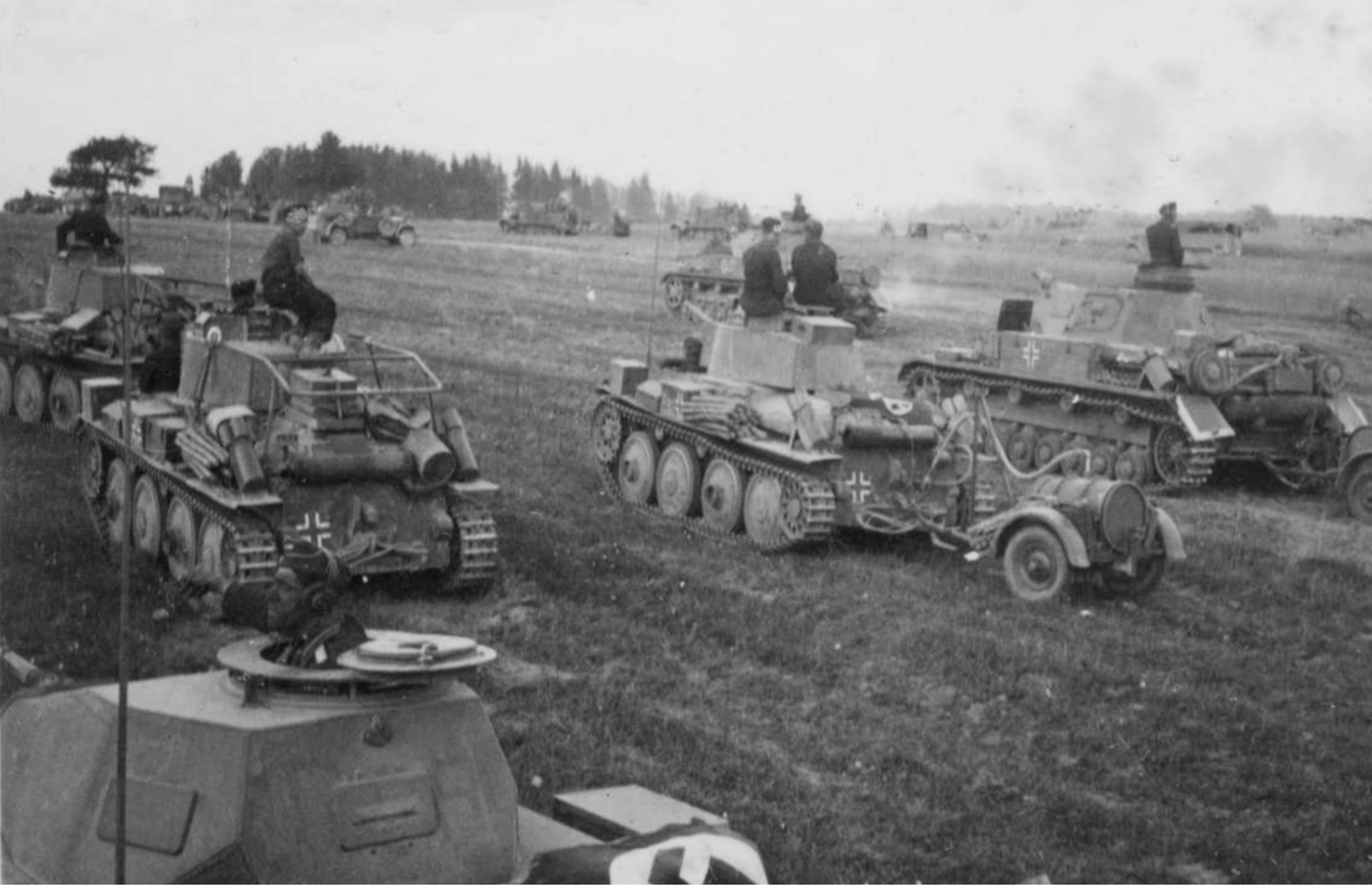
Below:
A column of PzKpfw III, possibly from 13.PzDiv, passes through a Russian village during the early phase of Operation Barbarossa (22 June 1941 to 5 December 1941). The lead tank is an Ausf G armed with a 5cm KwK L/42 and has 30mm extra armour bolted on the bow and front plates. The following tank is a PzKpfw III Ausf F which originally mounted a 3.7cm KwK L/45, but this has been replaced with a short-barreled 5cm KwK L/42 during major up-grading work. (Münch)



> According to the tactical situation collection points [support points] have to be established, damaged tanks can be transported there first, then later to the workshop company. All failed tanks, which cannot be recovered, must be prepared for being blown up (fit demolition charges, or fill with straw and flammable liquid). If the situation permits, all important equipment has to be removed.
>
> Workshop sections have to be consolidated; all heavy repairs must not be carried out near the frontline. To assist recovery teams, as many damaged tanks as possible must be made movable.
>
> Refuelling in open terrain must be executed during darkness or the tanks have to move to the fuel trucks when necessary.

This report by a field commander could not be more explicit. His analysis of the tactics used during the first six months was factually correct and relevant. In principle, these basic tactics proved to be valid until the end of the war. However, it is interesting that the commander does demand the reformation of the Panzer brigade as an integral part of the Panzer division. This concept was planned to allow higher-command echelons to lead and command the two Panzer regiments in the Panzer


Below:
At the beginning of *Unternehmen* Barbarossa, PzRgt 25 (7.PzDiv) had a complement of more than 200 tanks (the majority were PzKpfw 38[t]) forming three battalions. The numerals ‘01 and III’ denote this PzBefWg Ausf H as the vehicle of the commander of III *Abteilung*. The conspicuous frame-type antenna was used by crews as a rack for fuel cans; a large baulk of timber for recovery was often carried. (Anderson)



Above:
PzRgt 29 was another unit to be equipped with a large number of Czech-built tanks. Unlike PzRgt 25, the unit had PzBefWg 38(t) command tanks instead of the larger PzKpfw III version. All are fitted with non-standard smoke-grenade launchers; note one tank is towing a fuel drum on a two-wheeled trailer. (Baschin)

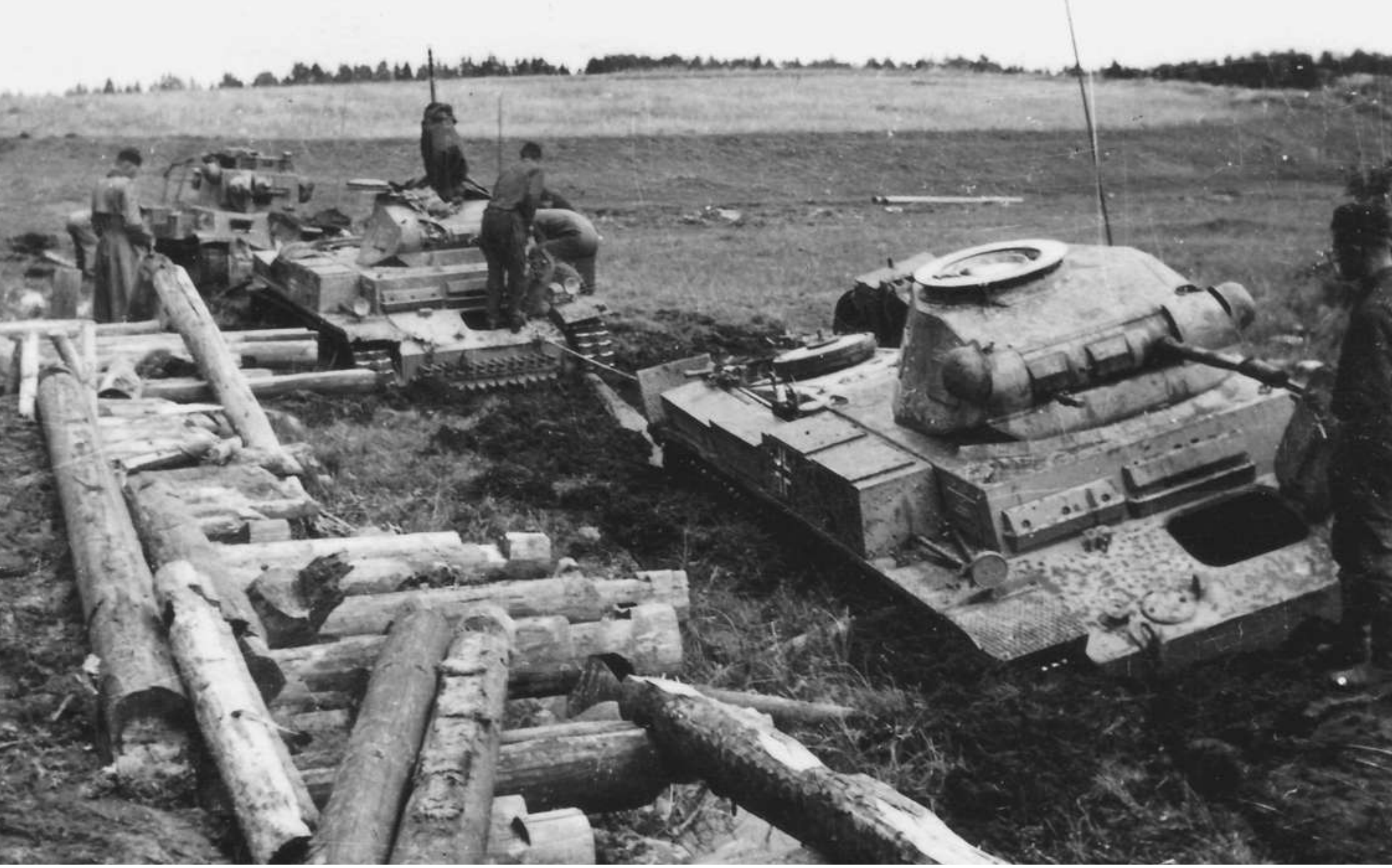
division. However, it was dropped after *Fall Gelb* (Plan Yellow), the invasion of France, had begun. The reason was simply to increase the number of Panzer divisions by reducing the strength of their tank detachments before operations in the east (see *Panzerwaffe*: *Volume 1*). The loss of firepower would be balanced by the improved performance of new tanks.

It is obvious that what the commander of PzRgt 33 really wanted was more tanks.

His wish was impossible to fulfill. The battle-worn units from the fighting during the winter of 1942 had to utilize what was operational. Soviet forces were also exhausted, and the war had frozen to a stalemate.

The report by the commander of PzRgt 33 continues:

> 4.) Experience of combat with larger tank formations:
>
> Initially, the experience of the absolute effectiveness of the 5cm and 7.5cm *Panzergranate* (HEAT shell) affected the morale of our troops. Despite this



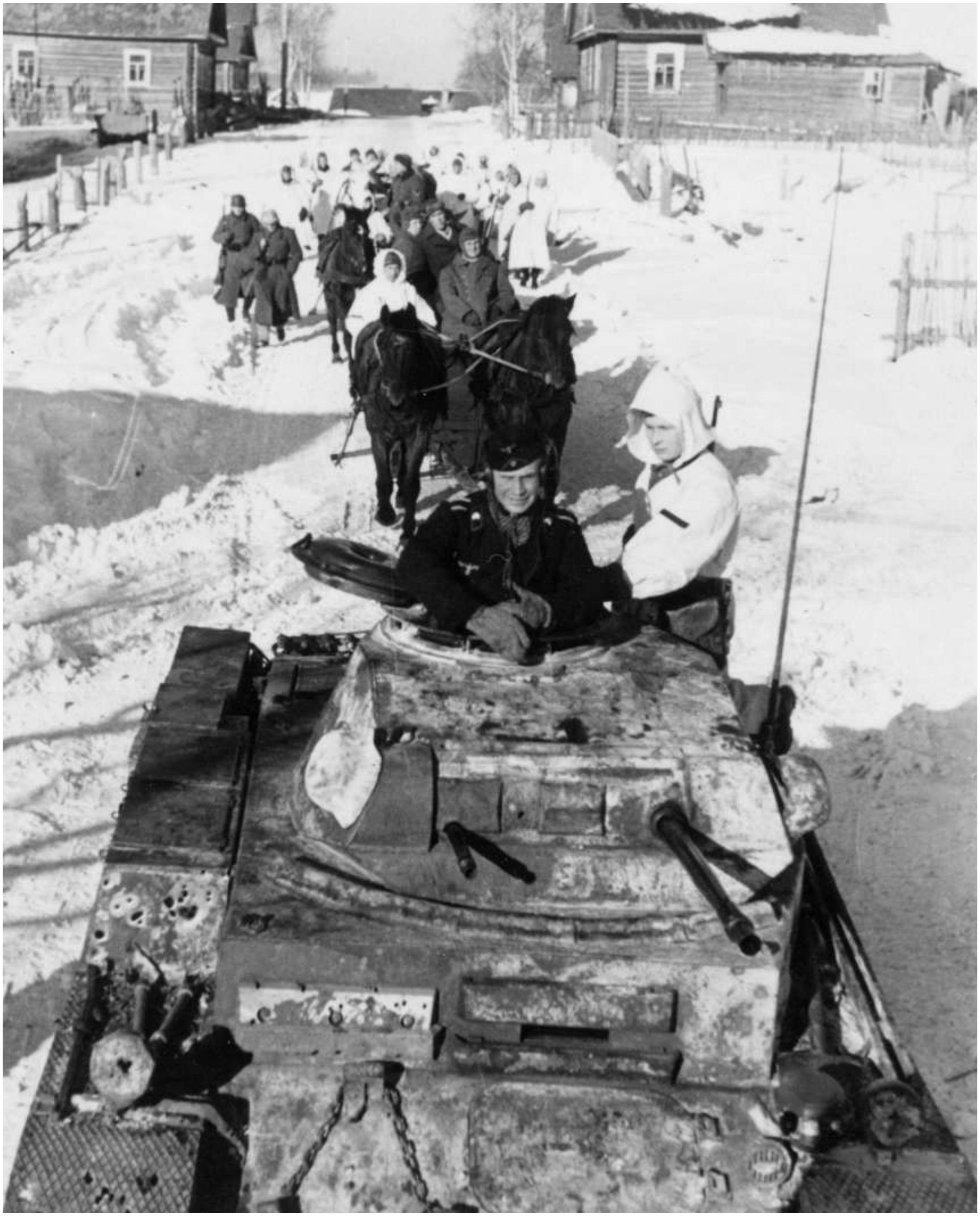
Above:
As the autumn rains began on the *Ost* (east) front, and the ground softened, it became vital to carefully survey the terrain before moving tanks. A PzKpfw II Ausf F has become bogged down and pioneers are attempting a recovery using a second PzKpfw II and a PzBefWg 38(t). The heavy timbers were to be placed under the tracks in an attempt to improve grip. (Anderson)

> fact, if a rapid advance by our troops succeeded it was mainly due to the Russian forces being impressed by our mass attack. At nightfall, all enemy tanks tended to retreat. The effect of the 7.5cm *Sondermunition* [special ammunition] is good. A hit by a Panzer IV will cause an internal fire which creates severe heat, resulting in an explosion which can blow the tank to pieces.
>
> The extreme accuracy of the gun in the Russian Christie tanks [possibly T-34, author] at long range was astonishing. Two rounds, bang, hit.

These observations are not surprising. The German PzKpfw III and IV were very vulnerable to fire from Soviet 7.62cm-armed tanks, as ammunition and fuel tended to ignite easily. The new 7.5cm GrPatr 38 HL ammunition was powerful and easily defeated most Soviet tanks, but it was not accurate.

The report continues:

> 5.) Assessment of the PzKpfw II:
>
> The Panzer II was rarely used for reconnaissance duties.



Above: In 1941, large numbers of PzKpfw II tanks were available and were issued to light platoons in both light and medium Panzer companies, also to the battalion staff. In the main they were used for reconnaissance and supply duties. Note the right-hand side storage box, which has been perforated by small-arms fire or shell splinters. (Erdmann)

> Reason:
> If the PzKpfw II is confronted, it can neither combat an enemy tank (its 2cm gun cannot penetrate Russian armour) nor an anti-tank gun position (even a 3.7cm anti-tank gun can easily penetrate its armour). For this reason we seek the replacement of the Panzer II, and also Panzer I. This will also bring a reduction in the number of tank types deployed.
>
> During the Russian campaign the Panzer II was used as:
> a. Mainly as dispatch vehicle between battalion commander and the companies when wireless communications failed.
> b. To protect local transport convoys.
> c. To assist hauling convoy vehicles through bad terrain.
>
> When compared to enemy light tanks, the Panzer II will always prove to be inferior.

The majority of the PzKpfw II tanks with units in Russia had been in service for a very long time. Even when intended as a temporary solution, until heavier tanks became available, the type did not meet the basic requirements of a modern light tank. Furthermore, weather and battlefield conditions on the eastern front severely limited operational readiness. It is difficult to

Below:
During the fighting in the east, the PzKpfw II soon prove to be out dated, and many troop commanders demanded for them to be replaced by medium tanks. However, the combination of a 2cm cannon and a co-axial machine gun was commonly regarded as very effective and the type continued to be used, mainly for reconnaissance, until end of the war. (Anderson)

Above:
A PzKpfw II Ausf F, operating as support for ski-borne troops, somewhere on the east front in the winter of 1941. Fire from the 2cm cannon was very effective for neutralizing enemy machine-gun posts and attacking artillery positions. (Anderson)

determine whether a direct comparison with Soviet light tanks is reasonable. The T-60 was of much simpler construction and much cheaper to produce. German reconnaissance units were in desperate need of a more-modern light tank, but the problem was never fully resolved.

The report continues:

> 6.) Experience gained in combat against enemy anti-tank weapons:
>
> a. Total destruction if hit by an enemy artillery shell.
> b. Enemy anti-tank guns were very effective.
> c. A 2.8kg mine will cause damage to the running gear. Several total losses occurred due to warped hulls.

d. Enemy close-combat teams armed with fuel-filled bottles [Molotov cocktails] were successful on some occasions. The seals around the hatches for the driver and the wireless operator have to be improved. When supported by our own tanks, enemy soldiers were defeated by our machine-gun fire. During the early days of combat, we suffered a number of losses when Russian soldiers deviously exploited the fact that we kept our hatches open. Therefore these will have to be closed especially when crossing fields of corn or sunflowers. Pistol and submachine gun ports were never used. Tanks hit by phosphorous ammunition tended to glow for hours in the darkness.

There is nothing to add. The German had to realize that the Russian soldier was dogged, dedicated and bold. Soviet anti-tank artillery was very powerful and available in very large numbers. As Stalin is supposed to have said, ‘Quantity has a quality all of its own.’ The 7.62cm gun was called *Ratschbumm* by German crews; the sound of the impact was heard before the report of the gun: No German tank was invulnerable to its firepower. The true reality of conditions on the eastern front demanded a most dedicated and determined military operation.

Further detail from the report:

7.) Enemy aircraft:

Fliegerbeschussgerät 41 [an anti-aircraft mounting on the turret of a tank to carry a *Maschinengewehr* 34] did not prove successful. Any effective protection against strafing enemy aircraft was possible only by anti-aircraft guns.

The *Fliegerbeschussgerät* 41, proved to be impractical in service. A replacement was produced and this became available in late 1942.

8.) Desired organization of the staff company:

1. Regimental staff company
   Command group: Three heavy PzBefWg
   Five Panzer III
   Reconnaissance section: Three SdKfz 251
   Six motorcycles
   Signals section: SdKfz 251
   Workshop section: Three SdKfz 251
   Five motorcycles
2. Battalion staff company
   Same as regimental staff company

Opposite above:
This PzKpfw IV Ausf F has received an almost perfect white-wash camouflage, but the crew has left the national insignia visible. Frontal armour has been increased to a massive 50mm during production. However, even this offered little protection against a T-34. (PeKo)

Opposite below:
In late 1942, a number of units were equipped with the PzKpfw 38(t), but the light tank was hopelessly outclassed in a *Panzerkampf* (tank-versus-tank battle). The type had very poor armour protection and the 3.7cm gun could not defeat the latest Soviet tanks. (Anderson)

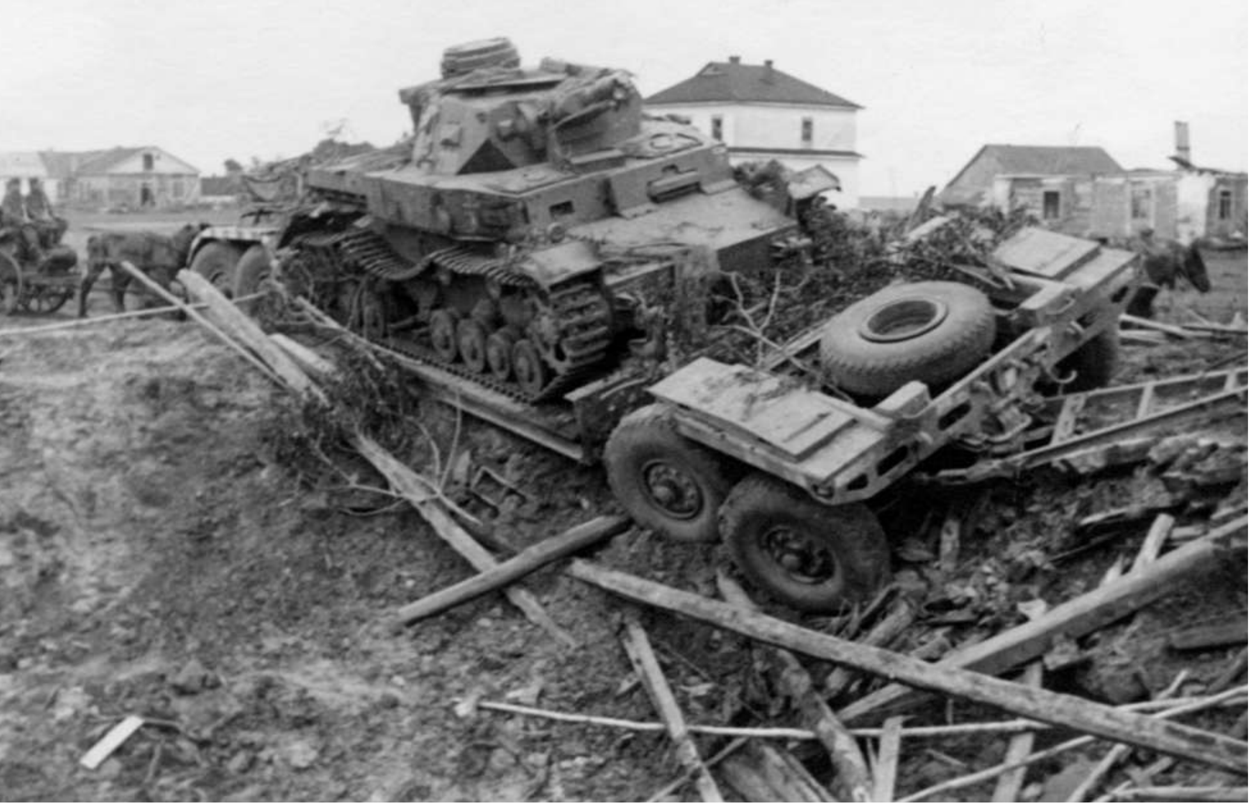
> Explanation:
> The staff companies' tanks and numerous MTW [armoured halftrack] will be used for safeguarding the trains. The pioneer *Zug* [platoon] is not required; any *Panzermann* should be able to set a simple explosive charge. The doctor needs an MTW, as do the armoured maintenance men.

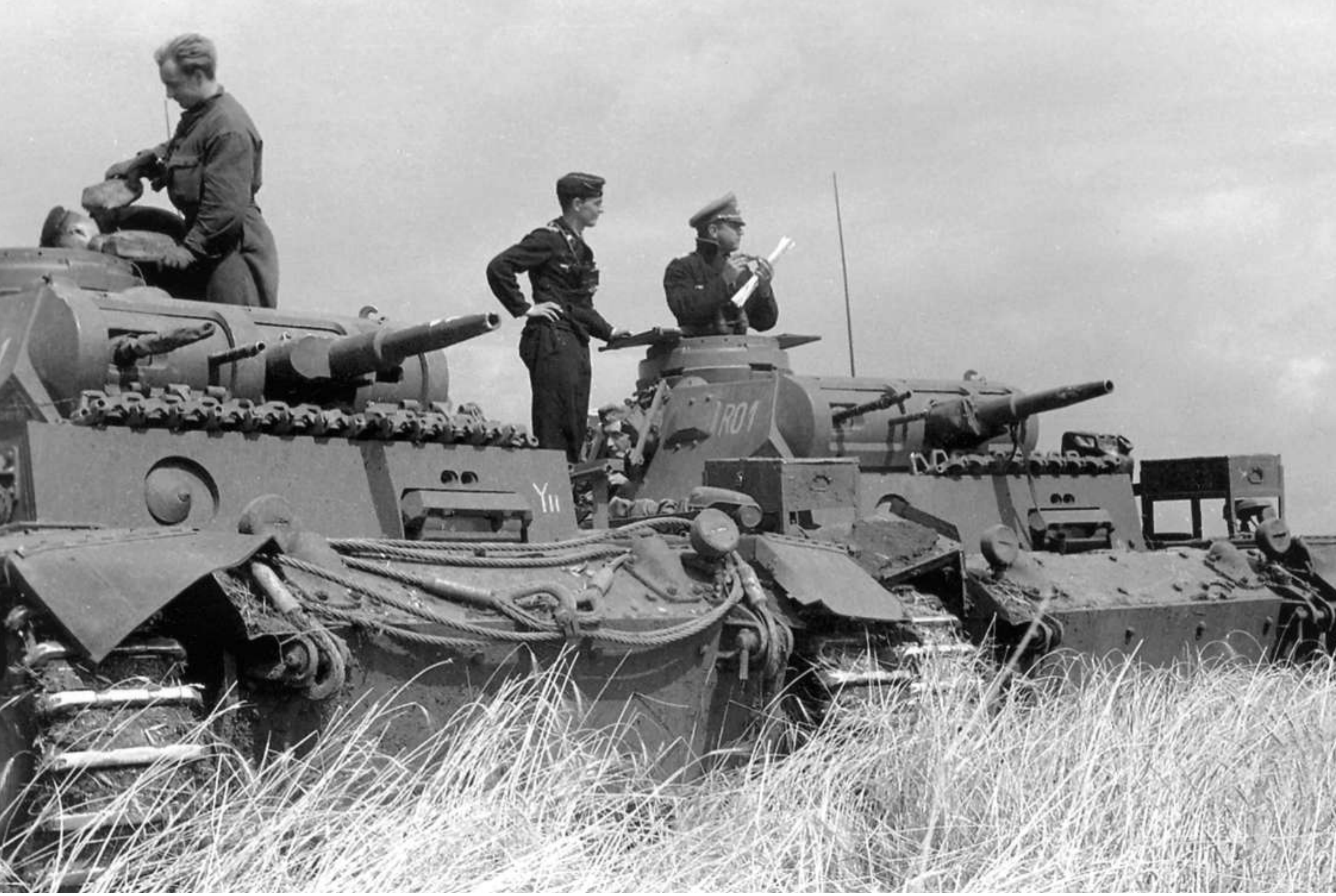
The commander demanded the strengthening of his staff company, in order to improve its mobility. The PzKpfw II, which was considered as being obsolete, should be replaced by PzKpfw III, which at that time was the main battle tank. All other important subunits of the staff were to receive armoured half-track vehicles, namely the SdKfz 251. As to why the commander did not require a pioneer platoon is a mystery, most considered it to be a vital part of a unit.

A year later, with the introduction of organizational structures, many of his wishes would become reality.

> 11.) Command structures:
>
> The existing *Panzerbefehlswagen* [PzBefWg – command tank] is adequate. In some cases the distinctive external appearance of the command tank

Below: The 22-ton *Sonderanhänger* (SdAnh) 116 *Tiefladeanhänger* (flatbed trailer) was the backbone of the German recovery services. However, under combat conditions on the eastern front it soon became evident that the trailer could only be used on smooth tracks or paved roads. A SdAnh 116, usually hauled by an SdKfz 9, loaded with a badly damaged PzKpfw IV Ausf E has broken through a temporary bridging structure. (Anderson)

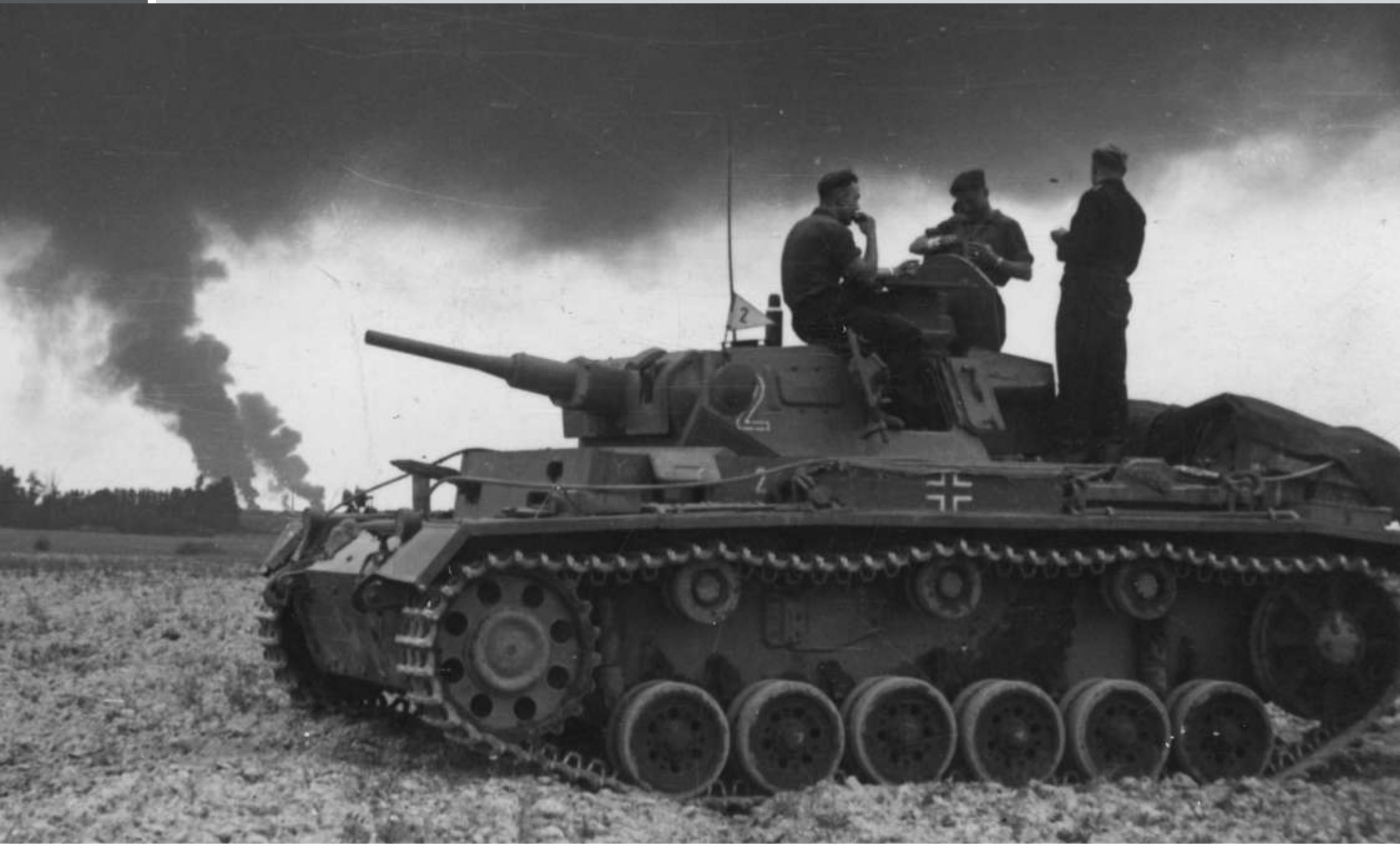




Above:
Two PzBefWg Ausf H from the regimental staff of 9.PzDiv: The type was fitted with dummy main armament, the only offensive weapon was a *Maschinengewehr* (MG) 34. The signals company or regimental and battalion staff companies were equipped with different radio equipment. The SdKfz 267 had long-range radios, and the SdKfz 268 ground-to-air radios. (Anderson)

> [double rod aerial and/or a frame antenna] proved to be a disadvantage. The commander and adjutant should have a tank each fitted with identical equipment. This would allow the adjutant to take command upon the loss of the commander without interrupting leadership during combat. At regimental staff level, the adjutant can direct the battalion commander if the regimental commander is lost.
> If necessary under special circumstances, the *Panzerbefehlswagen* in its present configuration allows the commander to fight alongside his combat troop in order to push the attack forward.

In principle, the command structures proved to be effective and reliable as field commanders were able to reform their staff companies according to their requirements. The problems regarding the command tank mentioned were indeed serious. Soviet tank crews and anti-tank gunners were good at identifying the conspicuous vehicle, which they attacked as a prime target. The introduction of the *Sternantenne* (star antenna) on command tanks



Above:
A PzKpfw III Ausf F (5cm *Umbau* – rebuilt) in service with 10.PzDiv. Barely visible on the side of the turret is the distinctive bison emblem of PzRgt 7. The numeral '2' denotes the company number, and differs to the standard three-numeral system. (Anderson)

not only gave better radio reception but also made the vehicles less conspicuous to the enemy.

> 12.) Smoke screening:
>
> In some cases smoke was used to approach the most heavily armoured Russian tanks, allowing some to be destroyed at close range. The smoke dischargers proved to be very effective. However, the armour protection plate over the discharger is important, as a hit by enemy infantry fire can ignite the candles.

From mid-1943, smoke dischargers were not used or fitted on tanks.

> 13.) Ammunition:
>
> a. For the Panzer III:
> The ratio of 1:1 *Panzergranate* [armour-piercing – AP – round] to *Sprenggranate* [high-explosive – HE – round] is too high. We suggest a ratio of 1:3.

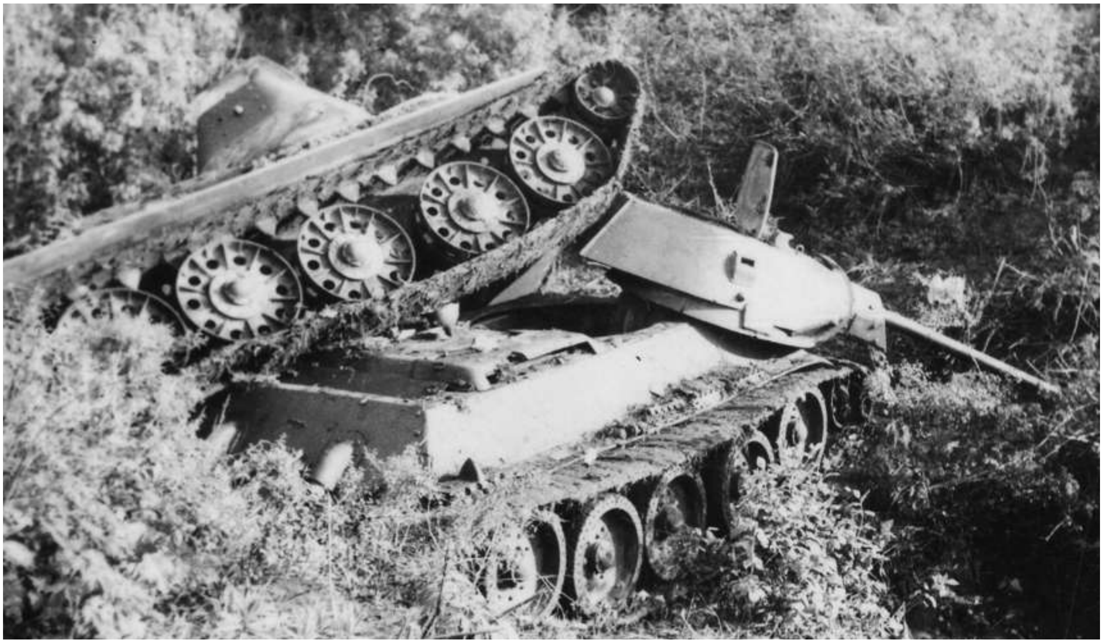
> b. For the Panzer IV:
> Seven parts *Panzergranate*
> Two parts *Sprenggranate* (if not equipped with PzGr 38 HI),
> One part *Nebelgranate* (smoke grenade)
>
> Ammunition supply was sufficient.

It is interesting that the commander makes a demand for more HE rounds for his 5cm KwK L/42-armed PzKpfw IIIs. A possible reason for his decision could be the poor performance of the *Panzergranate* when fired from this gun.

> 17.) Replacement personnel:
>
> These were provided from several *Ersatzabteilungen*, but many lacked basic as well as specialized training. In particular the training of a driver for the Panzer III and IV has to be improved. A lack of tanks at the replacement units impedes the training of a sufficient number of drivers. Units in the field are not able to train new drivers.

But field units were forced to train new drivers. In the years before the war there had been sufficient equipment to train thousands of tank crews, but after 1941 this was no longer possible. Replacement and training units were poorly equipped with armoured vehicles, many of those which had to be used were obsolete or battleworn.

Below:
Two T-34 from different production batches; the upper tank was built by Stalingradski Tractorni Zavod (STZ) and has resilient road wheels and a cast turret. The lower tank has rubber-tyred road wheels, and a welded turret. (Anderson)



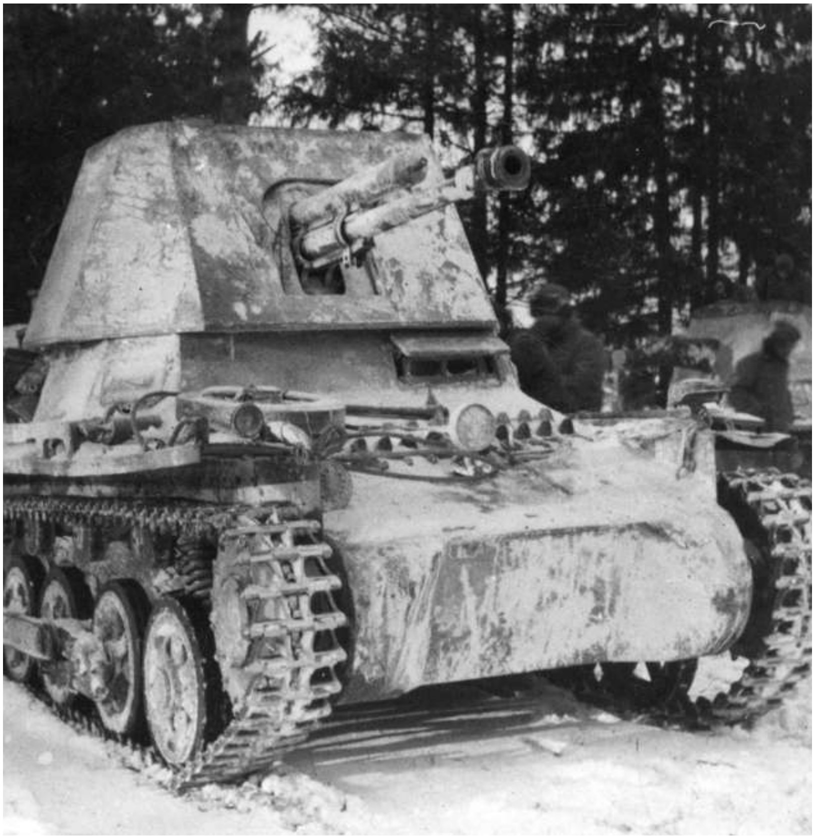
Keeping pace with the challenge

A few months after *Unternehmen* (Operation) Barbarossa was launched, German troops began to be faced by a new type of armoured threat, the T-34 medium tank and KV-1 heavy tank.

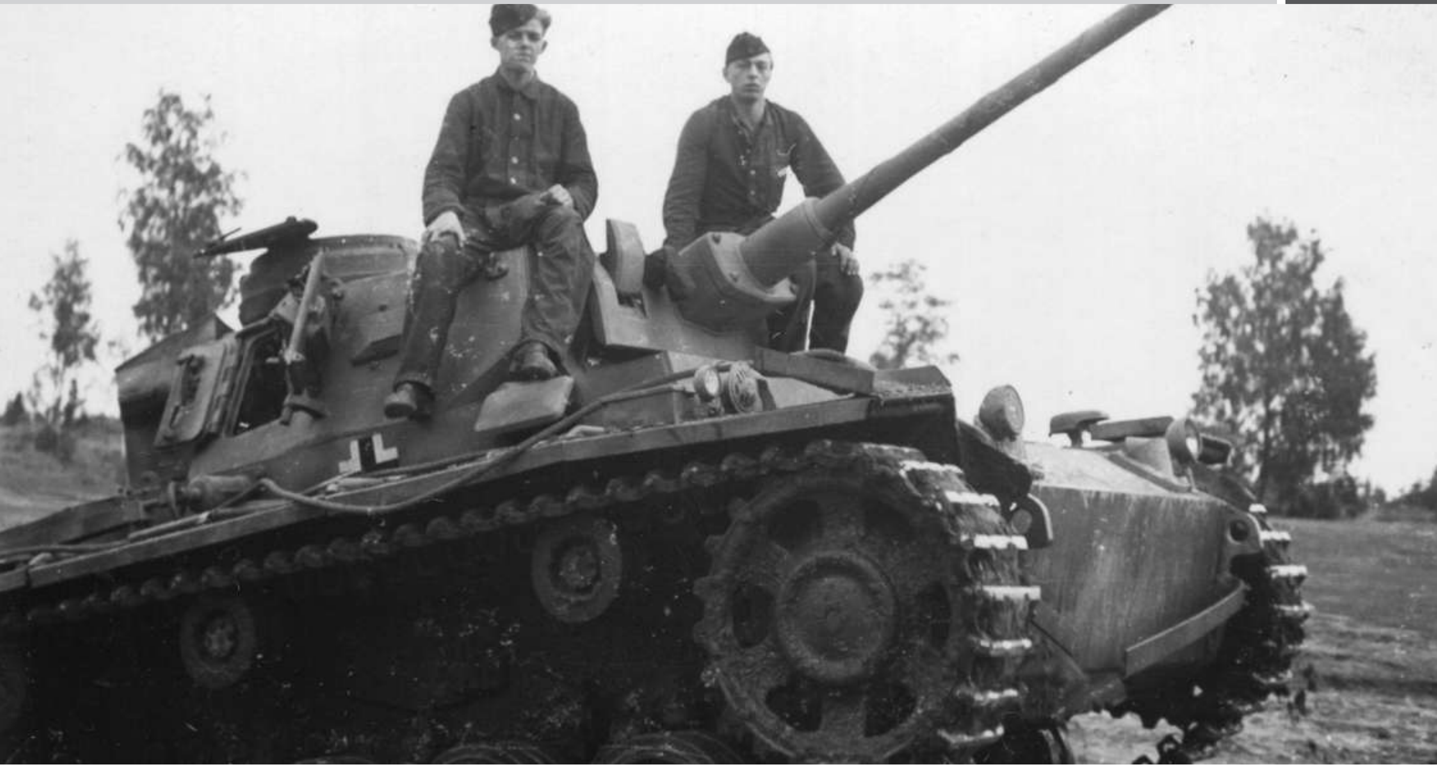
However, Soviet commanders proved unable to exploit these formidable new weapons; an incompetent high command which had been decimated by the many purges ordered by Stalin employed naïve tactics resulting in many dreadful strategic defeats. As a consequence, German troops made rapid and significant territorial gains.

Many dramatic incidents on the eastern front left no doubts in the minds of German military planners that current German tank developments were not sufficient to meet the latest Russian tanks. All German tanks of the time were clearly lacking in the three most important areas – firepower, mobility and armour protection.

In late 1941, the so-named *Panzerkommission* was established, and was staffed by active army officers, members of the *Heereswaffenamt* (HWA – Ordnance Bureau) and representatives from the armaments industry.



Right:
A number of captured Czech-built 4.7cm anti-tank guns were used to create the first German-built self-propelled tank destroyer. Sometimes referred to as the *Panzerjäger* (PzJg) I, these basic vehicles built on the chassis of the Pzkpfw I were issued to *Panzerjäger* units. However, the type was heavily overloaded, and most of those sent to the eastern front were lost during the winter of 1941/42. (Anderson)



Above:
In the early months of 1942, deliveries of the 5cm KwK 39 L/60 armed PzKpfw III began. These tanks were normally referred to as PzKpfw III (lang), (*Langrohr* – long barreled). Although combat against T-34 and KV was now possible at longer ranges, it remained extremely dangerous as the Soviets still held a technical advantage. The tank shown is an Ausf J, later re-designated Ausf L. (Anderson)

As a result of their discussions, German industry would work on three different areas:

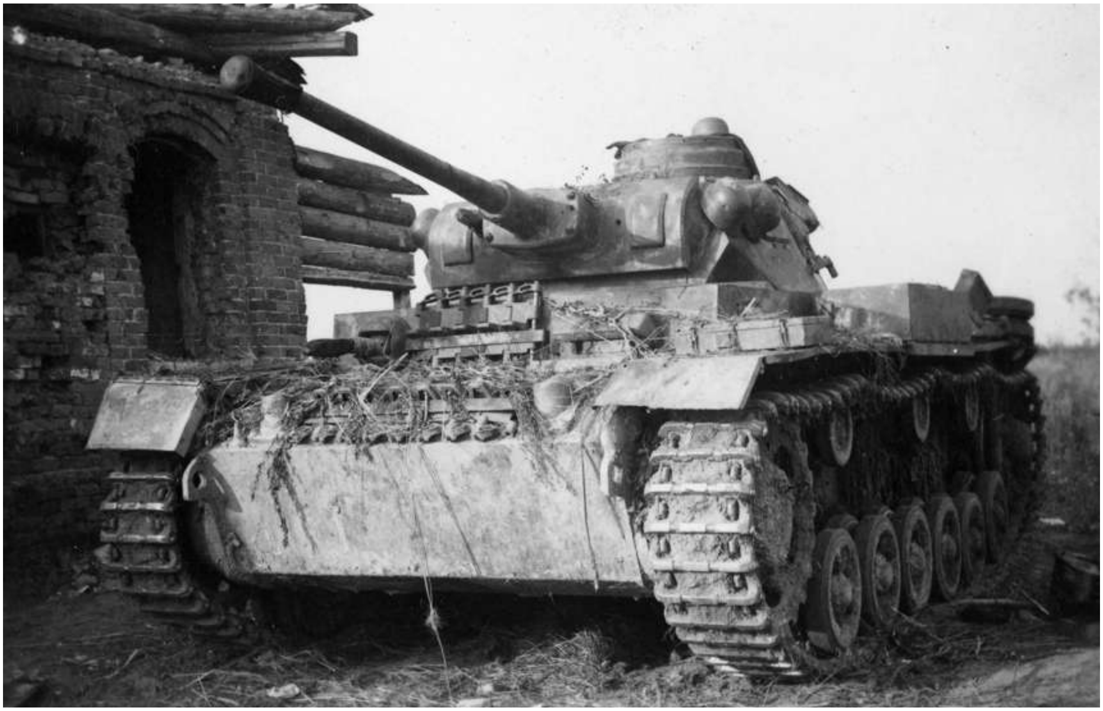
1. Improvement of the existing tank guns by developing new ammunition
2. Short-term production of a new tank gun with better penetration for the PzKpfw III and IV.
3. Medium-term development of new tanks to ensure total superiority on the battlefield.

Improving ammunition

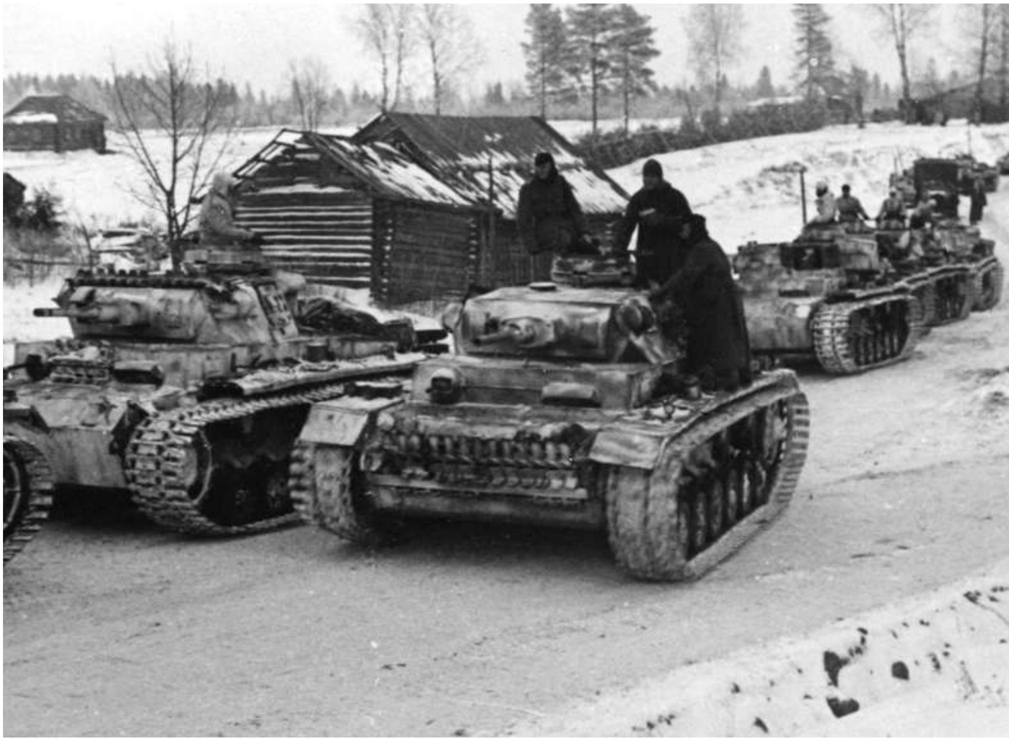
Germany had a significant armaments industry which employed well-trained specialists and engineers. Before the outbreak of war, *Sondermunition* (special ammunition) had been delivered to tank units to improve the performance and thus the service life of existing tank guns.

5cm KwK L/42

At the beginning of Operation Barbarossa, the majority of the PzKpfw III mounted the 5cm KwK L/42, (occasionally referred to as the KwK 40). The standard HE round for the gun was the 5cm *Sprenggranatpatrone* (SprGrPatr) 38 KwK. For combat against enemy tanks, the 5cm *Panzergranatpatrone* (PzGrPatr) KwK (also known as PzGr *rot* [red]) was available; this was the first armour-piercing (AP) round.



Above:
A PzKpfw III Ausf J (lang) from PzRgt 203; to improve protection the crew has placed additional track links on the glacis and front plate. This practice was officially forbidden, but it was widely accepted as a boost to morale. (Münch)



Right:
PzKpfw III Ausf J (5cm KwK L/42) from 12.PzDiv in a Russian village. The main limitation of German PzKpfw IIII and IV tanks was poor cross-country mobility, due to their narrow tracks. To improve traction wider *Winterketten* (winter tracks) were introduced. (Anderson)

Above:
During the many counterattacks after the battle for Moscow, the feared 8.8cm FlaK 36 often formed the last line of defence against Soviet tanks. The powerful gun was able to destroy T-34 and KV at very long range. However, when sited in open positions, many were easily located and destroyed by enemy artillery. (Anderson)

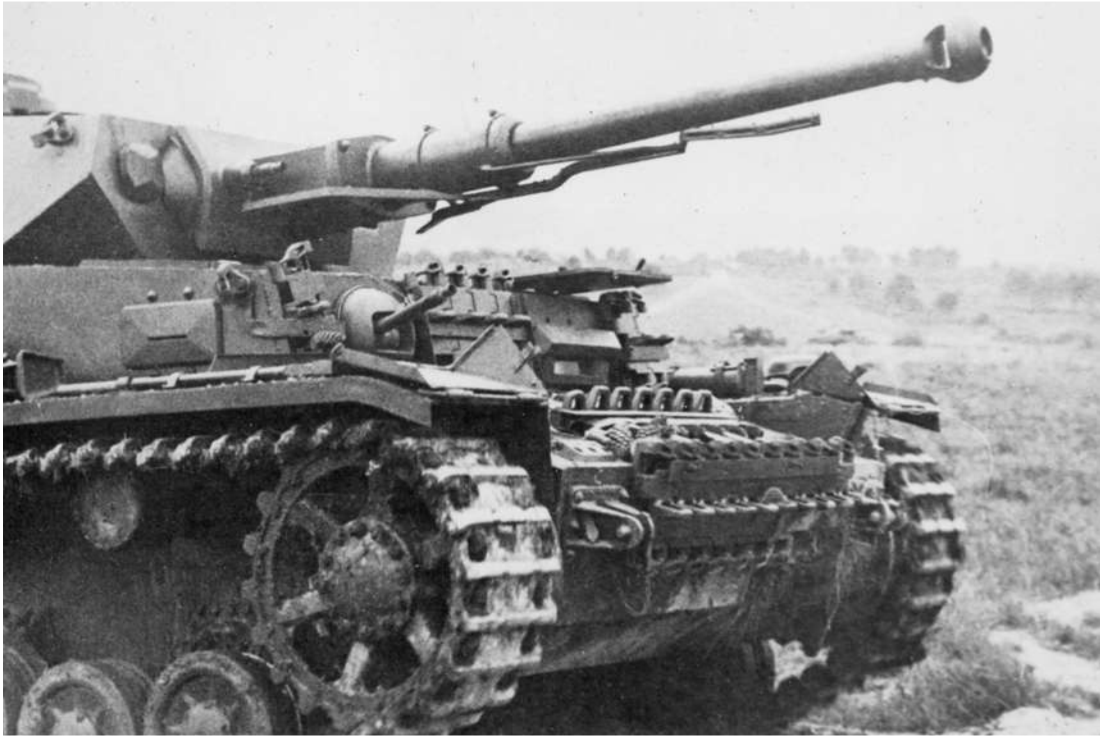
The 5cm PzGrPatr 39 was basically the same round, but had a cap fabricated from soft metal (APC round), which softened the impact preventing the round from shattering.

The 5cm PzGrPatr 40 round had a tungsten core which considerably improved penetration.

7.5cm KwK L/24

Due to its specific applications, this gun fired a wider range of ammunition. The 7.5cm *Granatpatrone* (GrPatr) KwK high-explosive (HE) round and also the 7.5cm *Nebelgranatpatrone* (NbGrPatr) KwK, smoke shell were available. The standard anti-tank round was the 7.5cm PzGrPatr KwK (or PzGrPatr *rot* – [red]), an armour-piercing, capped (APC) round.

The 7.5cm GrPatr 38 *Hohlladungsgeschoss* (HL – shaped-charge projectile) was available by the end of 1940. This was a hollow-charge or high-explosive, anti-tank (HEAT) shell, had effective penetration performance at realistic ranges. This hollow-charge round was ordered into production by Adolf Hitler on 12 December 1941 and deliveries began in January 1942. The HL and the HE rounds were the only ammunition able to defeat the modern Russian tanks. Due to technical developments, this ammunition was quickly improved and the 7.5cm GrPatr 38 HL was soon replaced by the HL/B and HL/C. As the availability of the GrPatr 38 improved, so production of the PzGrPatr (*rot*) was ended.



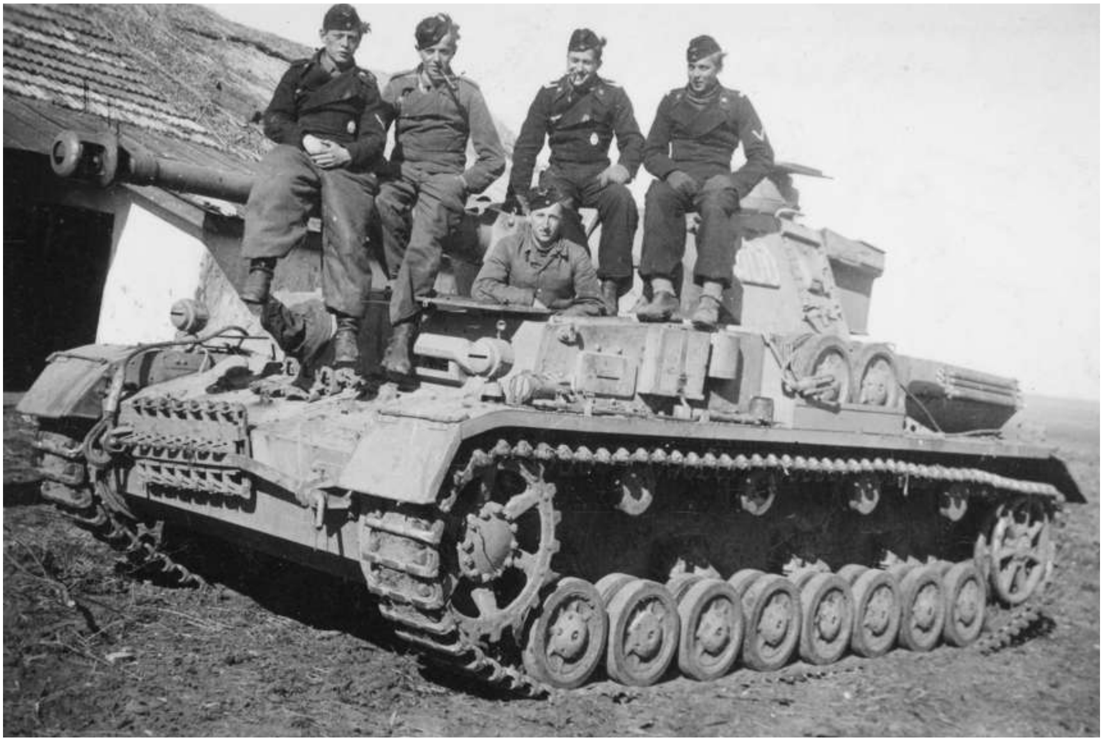
Above:
The high-velocity 7.5cm KwK L/43 gun was first mounted in the PzKpfw IV Ausf G (also referred to as F2). Shown is an early production vehicle; note the 'zig-zag' shaped antenna deflector under the gun barrel which has a single-baffle muzzle brake. (Anderson)

2. *Langrohr* – long-barreled guns

The penetration performance of a tank gun is dependent on a number of variables. An increase in barrel length led to a more efficient propellant charge, which in turn should result in a higher muzzle velocity, theoretically giving better armour penetration.

Indeed, long before the outbreak of war, German army officials had made demands for a longer-barreled gun. In 1935, the ordnance office produced a report:

> Offensive defence of tanks
> *Begleitwagen* (BW)
>
> The 7.5cm *Kanone* on this tank has a barrel length of L/24 and a muzzle velocity of 430kps. With this performance a 7.5cm PzGr will penetrate 43mm thick armour plate, at a range of 700m and a 60° angle of impact. Regarding the absolute penetration effect, the BW is able to cope with the new French tanks [by the end of 1935 some 1,000 with armour protection increased up to 40mm had been delivered]. Theoretical calculations, which will have to be proven in practical tests, show that accuracy will decrease due to the trajectory resulting from the low



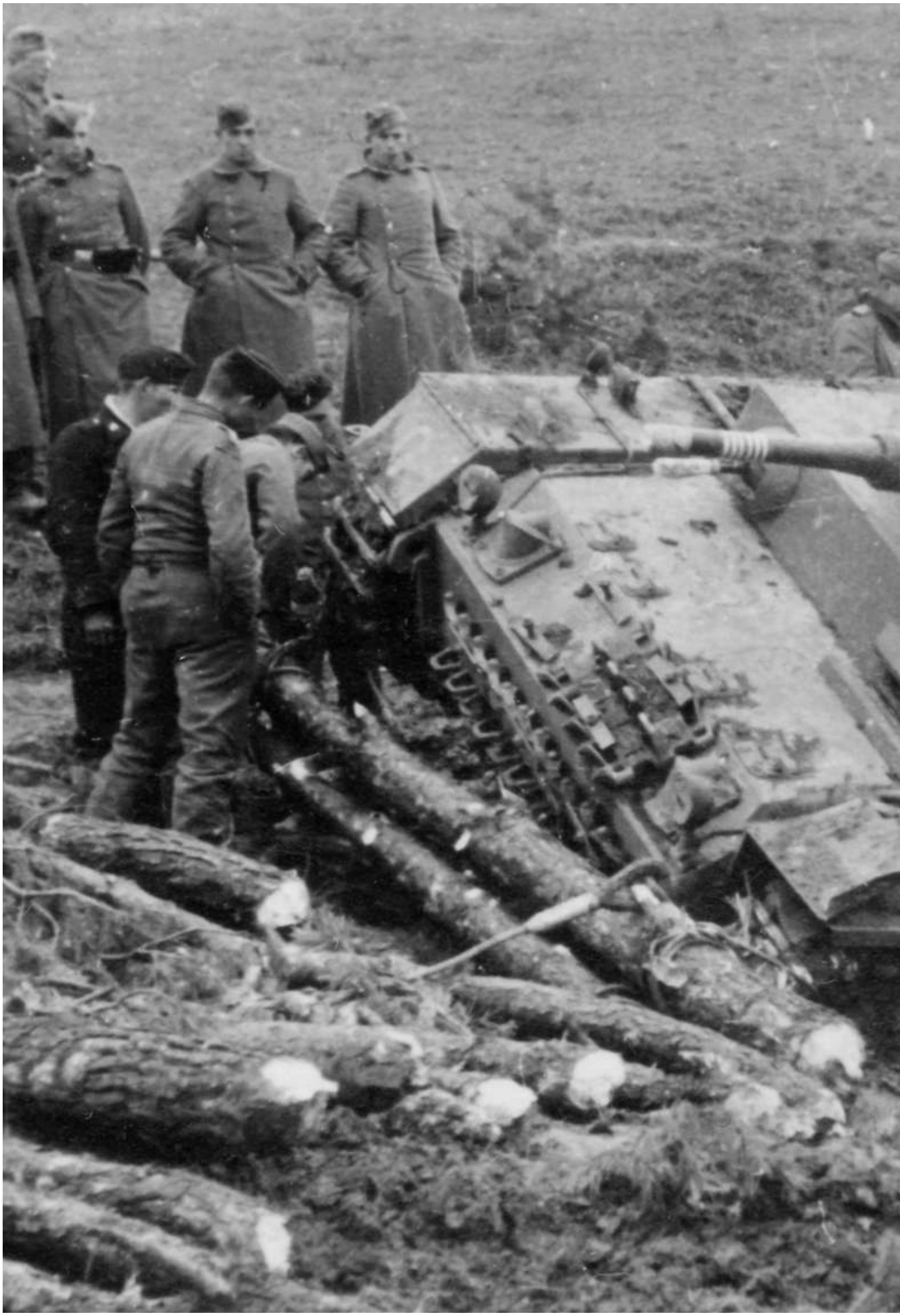
Above:
A standard production Panzer IV (lang) Ausf G, seems to have been delivered painted in tropical camouflage (RAL 8000 sand yellow and RAL 7008 grey-brown), this was not an uncommon occurrence on the eastern front in 1942. (Anderson)

> muzzle velocity. Nevertheless we do say that the BW is fully equal to all forthcoming French tanks, with the exception of the Char 2 C, 3 C and 3 D heavy tank.
>
> An increase in the muzzle velocity of the 7.5cm *Kanone* should reach 650 kmps, ensuring sufficient ballistic performance to achieve a destructive impact against the Char 2 C, 3 C and D.
>
> Such an increase requires a totally new tank design, which, according to estimates, would have a weight of at least 30 tons, assuming that it has 20mm frontal armour (which is not proof against 2cm fire). The honorable *Oberbefehlshaber des Heeres* [ObdH – commander-in-chief of the army] recently spoke out against such a tank.

The report show clearly that farsightedness and stubbornness did go hand in hand. The technical assessment regarding the size of a tank carrying a longer 7.5cm gun was wrong. As history would show, the PzKpfw IV proved to be suitable for mounting this gun. Work on a 7.5cm long-barrel gun for the *Sturmgeschütz* had already begun in 1938.

Before beginning of the invasion of the Soviet Union, the PzKpfw III was re-armed as the 5cm KwK L/42 entered production. This decision is somewhat a mystery, since at the 5cm PaK 38 L/60 had been introduced as the main weapon for the *Panzerjäger*. This new gun had considerably better armour

Right:
The terrain on the eastern front presented many problems for operations by the *Panzerwaffe*. A PzKpfw III Ausf J from 17.PzDiv has sunk into deep mud; the crew, assisted by pioneers, is placing tree trunks under the left track in an attempt to gain some traction. An identifying swastika flag has been spread over the turret top to prevent attack by patrolling *Luftwaffe* aircraft. (Anderson)



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penetration (see table), and could have easily been mounted in the PzKpfw III without any problems. However, the *Waffenamt* decided otherwise, and ignored a direct order from Hitler.

A long-barrel gun for the PzKpfw III

In early part of 1941, after a confrontation with the *Waffenamt*, Hitler ordered that the 5cm PaK 38 was to be modified for installation in the PzKpfw III and IV. In October, a PzKpfw IV Ausf D was modified and tested during the winter months at St. Johann, Austria. But, since the development and production of a 7.5cm long-barreled gun for the PzKpfw IV had been already decided, the project was cancelled.

Although the armaments industry considered the installation of a 5cm KwK 38 L/60 in the turret of the PzKpfw III to be impossible, Hitler demanded that it was done immediately: There are no details known of any technical problems. In late 1941, the KwK 38 L/60 (also known as the 39) long-barrel gun entered production and was mounted in the second batch of PzKpfw III Ausf J, later re-designated Ausf L.

During 1942, the combat value of the PzKpfw III was officially downgraded. While the 5cm KwK L/60 proved to be of value on the battlefields of North Africa, conditions the eastern front set tougher requirements.

The PzKpfw IV

In contradiction to the 1935 report, the armaments company Krupp was contracted in March 1941 to commence work on a 7.5cm L/33 gun for

Techical data German tank guns as of 1941/42

Weapon:	3.7cm KwK 38(t)		5cm KwK L/42		5cm KwK L/60			7.5cm KwK		7.5cm KwK 40/StuK 40		
Application:	PzKpfw 38(t)		PzKpfw III Ausf F to J		PzKpfw III Ausf J to M			PzKpfw IV StuG Ausf A to E		PzKpfw IV Ausf G StuG Ausf F, F/8, G		
Calibre length:	L/46		L/42		L/60			L/24		L/43 resp L/48		
Ammunition:	PzGr 40	PzGr (*rot*)	PzGr 39	PzGr 40	PzGr (*rot*)	PzGr 39	PzGr 40	GrPatr 38 HL/B	PzGr (*rot*)	PzGr 39	GrPatr 38 HL/B	PzGr 40
Muzzle velocity mps:	1,040	685	685	1,050	835	835	1,180	450	385	790	450	990
Penetration in mm at range:												
100m	64	53	55	94	67	69	130	75	41	106	75	143
500m	33	43	47	55	57	59	72	75	38	96	75	120
1,000m	0	32	37	0	44	47	0	75	35	80	75	97
1,500m	0	24	28	0	34	37	0	75	32	63	75	77

the BW tank, or PzKpfw IV. The length of the barrel was to be slightly increased, possibly to keep it within certain limits to prevent damage when the turret was turned. This was another incomprehensible decision by the *Waffenamt* which could be barely backed up by any experience gained from front-line forces.

However, the appearance of the T-34 forced the authorities to stop and question all current tank developments. In November 1941, Krupp received an order to design a new tank gun with the same ballistic performance as the long-barreled 7.5cm PaK 40 L/46, designed by Rheinmetall-Borsig. The development of the new 7.5cm gun had been completed by the end of 1941 and it entered production in March 1942. Initially designated 7.5cm KwK 44 L/43, it was chosen for both the PzKpfw IV and *Sturmgeschütz*. A short time later the designation was changed to KwK 40.

German battle tanks, production 1942:

<table>
<tr><th>Production 1942</th><th>PzKpfw III L/60</th><th>PzKpfw III L/24</th><th>PzKpfw IV L/24</th><th>PzKpfw IV L/43</th></tr>
<tr><td>January</td><td>60</td><td>0</td><td>65</td><td>0</td></tr>
<tr><td>February</td><td>122</td><td>0</td><td>53</td><td>0</td></tr>
<tr><td>March</td><td>186</td><td>0</td><td>28</td><td>0</td></tr>
<tr><td>April</td><td>194</td><td>0</td><td>4 (reworked)</td><td>75</td></tr>
<tr><td>May</td><td>198</td><td>0</td><td>14 (reworked)</td><td>286</td></tr>
<tr><td>June</td><td>278</td><td>0</td><td>11 (reworked)</td><td>72</td></tr>
<tr><td>July</td><td>172</td><td>21</td><td>19 (reworked)</td><td>80</td></tr>
<tr><td>August</td><td>105</td><td>167</td><td>24 (reworked)</td><td>94</td></tr>
<tr><td>September</td><td colspan="2">186</td><td>?</td><td>90</td></tr>
<tr><td>October</td><td colspan="2">188</td><td>?</td><td>99</td></tr>
<tr><td>November</td><td colspan="2">178</td><td>?</td><td>113</td></tr>
<tr><td>December</td><td colspan="2">221</td><td>?</td><td>155</td></tr>
</table>

The ammunition for the new long-barrel (*Langrohr* – lang) gun was developed in parallel with that for the 7.5cm PaK 40. However, to get sufficient ammunition inside the tank, the cartridges were shortened but increased in diameter.

7.5cm KwK 40 L/43

The 7.5cm SprGrPatr 34 was the standard HE round. For combat of tanks, the 7.5cm PzGrPatr 39 was introduced as the standard APC shell.

As with 3.7 and 5cm tank and anti-tank guns, a *Sondermunition*, the tungsten-cored 7.5cm PzGrPatr 40, HVAP (high-velocity, armour-piercing) or in British terms APCR (armour-piercing, composite rigid) was available for the 7.5cm StuK 40. However, tungsten was a

Mangelmaterial (scarce material) and difficult for German industry to obtain which led to very small numbers being produced. Tank crews reserved the PzGr 40 shells for combat against Soviet heavy tanks only.

The 7.5cm PzGrPatr 40 (W) was externally identical to the standard PrGr 40, but the tungsten core was replaced by unhardened steel. According to a wartime document, this round was to be produced on demand as a substitute for the PzGr 40, only when tungsten was not available. This also meant that the production facilities for the high-performance ammunition could be kept open. The performance of the round was even inferior to that of the PzGr 39.

The 7.5cm GrPatr 38 HL/B, 7.5cm GrPatr 38 HL/C, were principally an effective and cost-effective round. Although useful, accuracy was reduced by a slow muzzle velocity and a high trajectory. However, performance was improved as new version became available.

The 7.5cm NbGrPatr was a smoke shell for laying a covering screen.

In 1942, the PzGrPatr 39 was the most numerous (and important) anti-tank round available for the 7.5cm StuK 40 L/43. The more powerful PzGr 40 was only available in limited quantities. Aware of the difficult supply situation, tank crews were forced to use HL and PzGr 39 rounds; the PzGr 40 was to be used only when engaging 'difficult to combat' tanks

3. Regaining superiority

As the more modern, and difficult to defeat, Soviet tanks appeared on the battlefield, it became clear to German military planners that a new generation of combat tanks was required to regain and maintain superiority. In mid-1942 the *Überblick über den Stand der Entwicklungen beim Heer*, a list of all new developments in the army, was published and listed all current production figures and new developments. It was the intention of German military planners to completely re-arrange the arms programme. However, reality did halt the realization of many plans. The following are some of the proposed tank projects.

Lynx with 2cm KwK (VK 13.03)

In 1942, a new light tank was requested for reconnaissance units. Following the standard German tank design the vehicle would be fitted with interleaved suspension. It was specified that the vehicle would be fast, highly mobile and mount a 2cm KwK gun. Originally designated PzKpfw II Ausf L, the *Panzerspähwagen* (PzSpWg) *Luchs* (Lynx) bore no resemblance to the tank.

Status: This vehicle entered limited production in late 1942.

Leopard (VK 16.02)

The Leopard was developed in parallel to the *Luchs*, following the requirement for a new *Gefechtsaufklärer* (combat reconnaissance vehicle). The 26-ton Leopard was basically a scaled-down Panther, to be armed with 5cm KwK L/60 gun mounted in an open-topped turret.

Status: Drawings only

PzBefWg with 5cm KwK on a PzKpfw III chassis

Following troops demands, a modernized command tank mounting the 5cm KwK L/60 was developed. However, production of the PzKpfw V Panther had begun and a command version was available.

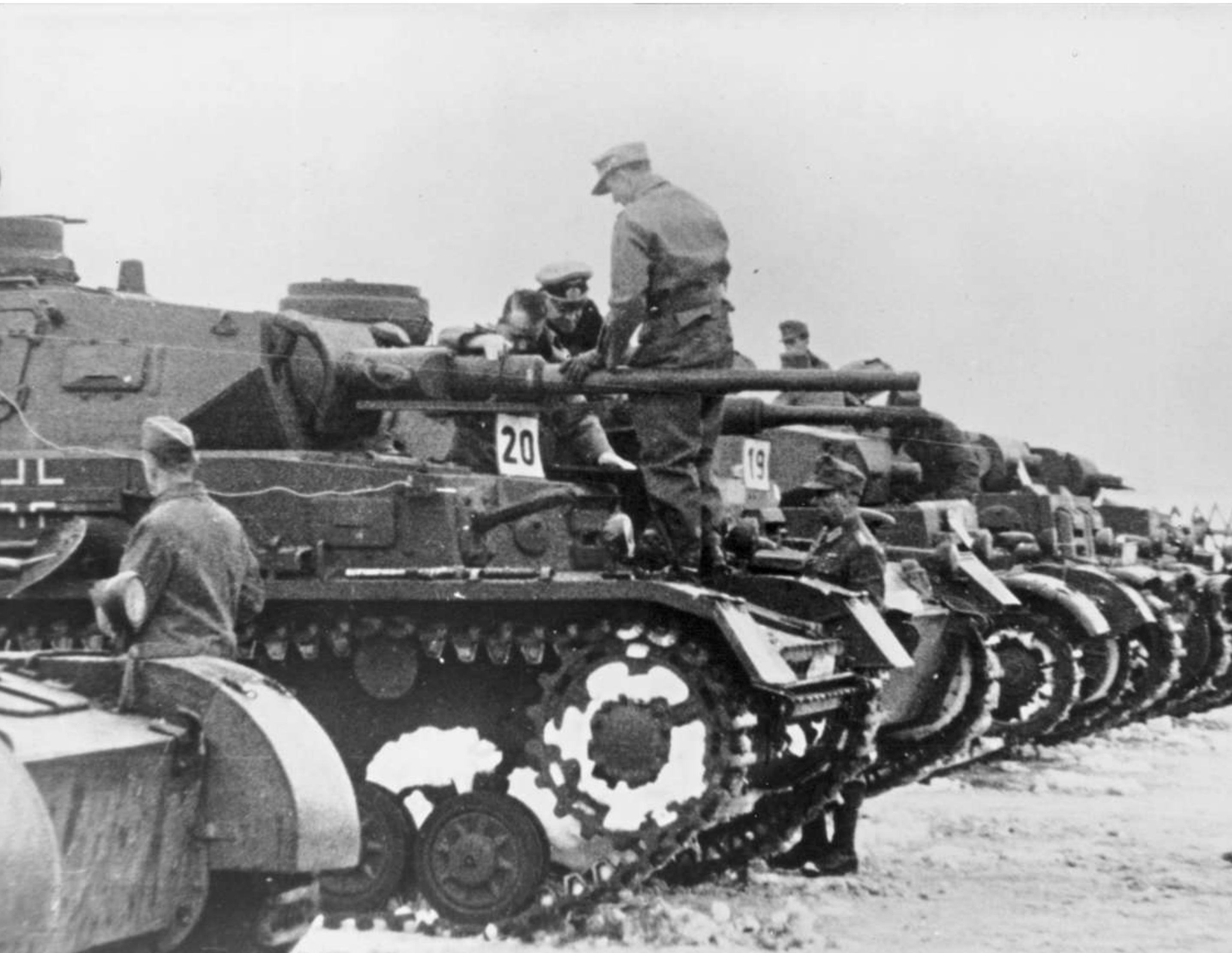
Status: The vehicle entered limited production as the PzBefWg Ausf K

PzKpfw IV (VK 36.01)

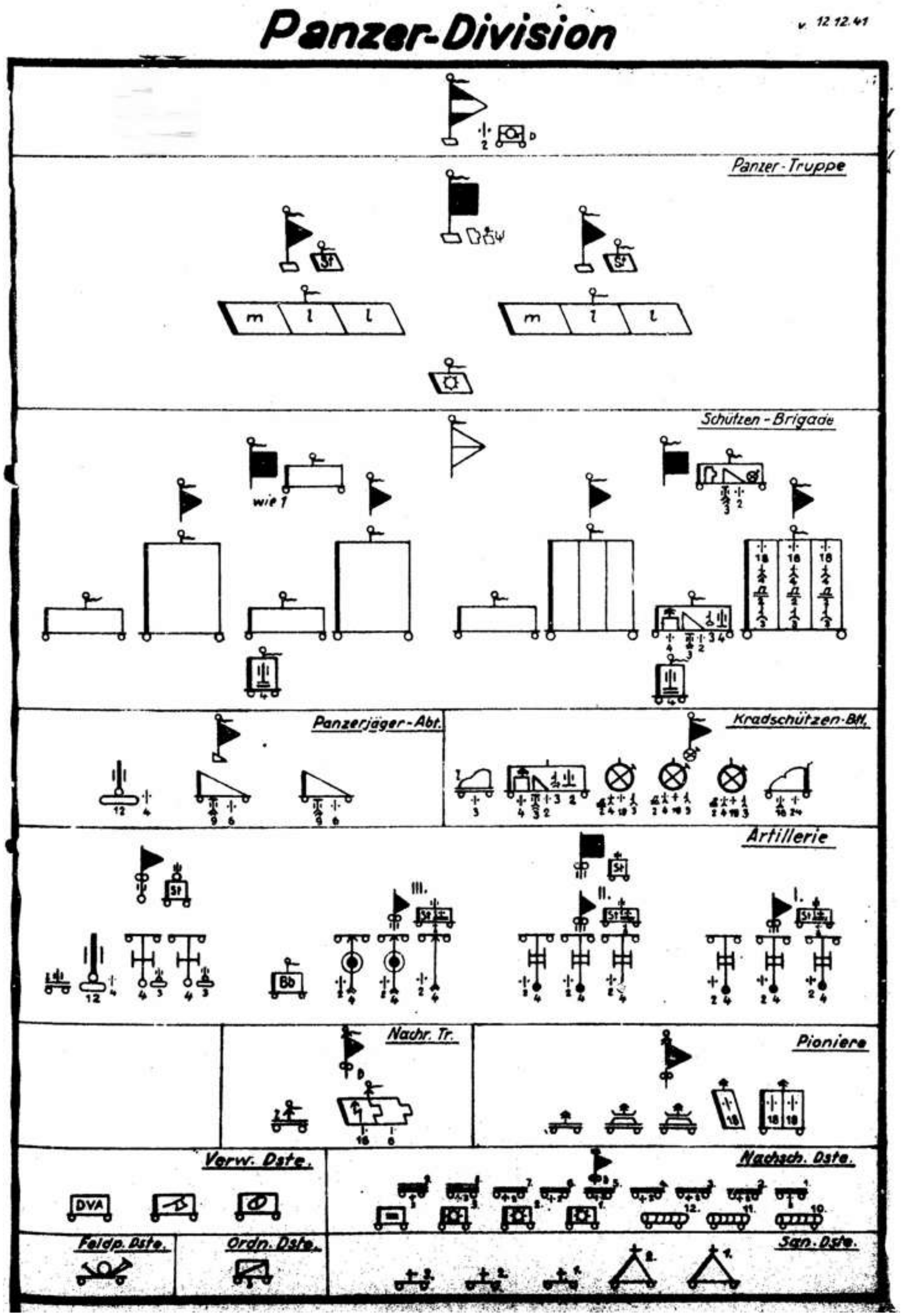
A heavily-armoured replacement for the BW, using components from a production PzKpfw IV, was requested and a number of different design proposals were examined.

Status: These ideas were dropped in favour of the current PzKpfw IV.

Below:
Before the 7.5cm KwK 40 L/42 became available, trials were undertaken to install the 5cm KwK 39 L/60 in the turret of a PzKpfw IV Ausf D. The tank (No 20) is in a line-up of modified and developed tanks ready for inspection by Adolf Hitler. (Anderson)



Panzer division as of December 1941


Panzer-Division
v. 12.12.41
Panzer-Truppe
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Panzerjäger-Abt.
Kradschützen-Btl.
Artillerie
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II.
I.
Bb
Nachr. Tr.
Pioniere
Verw. Dste.
DVA
Nachsch. Dste.
Feldp. Dste.
Ordn. Dste.
San. Dste.

PzKpfw V Panther (VK 30.02)

Influenced by the T-34 of the Soviet Army, German designers prepared drawings for a modern medium tank which was developed by Daimler-Benz and MAN. The vehicle mounted a high-performance 7.5cm KwK 42 L/70 gun and had 80mm frontal armour. It was planned for the type to replace the PzKpfw III and IV, but this would never happen

Status: Production of the Panther began at the MAN factory in November 1942.

PzKpfw VI Tiger

At the same time as the Panther medium tank was being developed, the specification for a heavy breakthrough tank was delivered. The design would be heavily armoured (100mm at the front, 60mm at sides and rear) and mount the powerful 8.8cm KwK L/56 to allow targets to be effectively engaged at long range. The design teams at Porsche and Henschel produced their own, distinctive versions for trials.

Status: The Henschel design was chosen and entered production in August 1942.

Heavy Recovery Vehicle (VKz 35.01)

A *schweres Abschleppfahrzeug* (heavy recovery vehicle) was requested to serve with units equipped with the proposed medium and heavy tanks. The designation suggests a tracked vehicle weighing 35 tons, powered by the same Maybach engine as used in the later Tiger and Panther tanks. Towing capacity was not specified.

Status: Despite a definite need, the VKz 35.01 was never produced.

The stage was now set for German forces to launch their summer offensive.

Organizational changes

Facing the desperate state of the entire army in the east; ObdH noted this in an order sent on 12 December 1941:

> I.) Situation:
>
> 1.) The operations in the east during 1941 have considerably worn out the army in both personnel and equipment respectively. Battle strengths, partiularly those of the infantry, have weakened significantly.
> The depletion of the motorized troops has affected the mobility of the army… The losses of motorized vehicles were very high; the peak of the army's mobility, which had been reached in spring 1941, cannot be maintained. Drastic actions are necessary to restore the combat power of our field forces but this will not happen until spring of 1942.

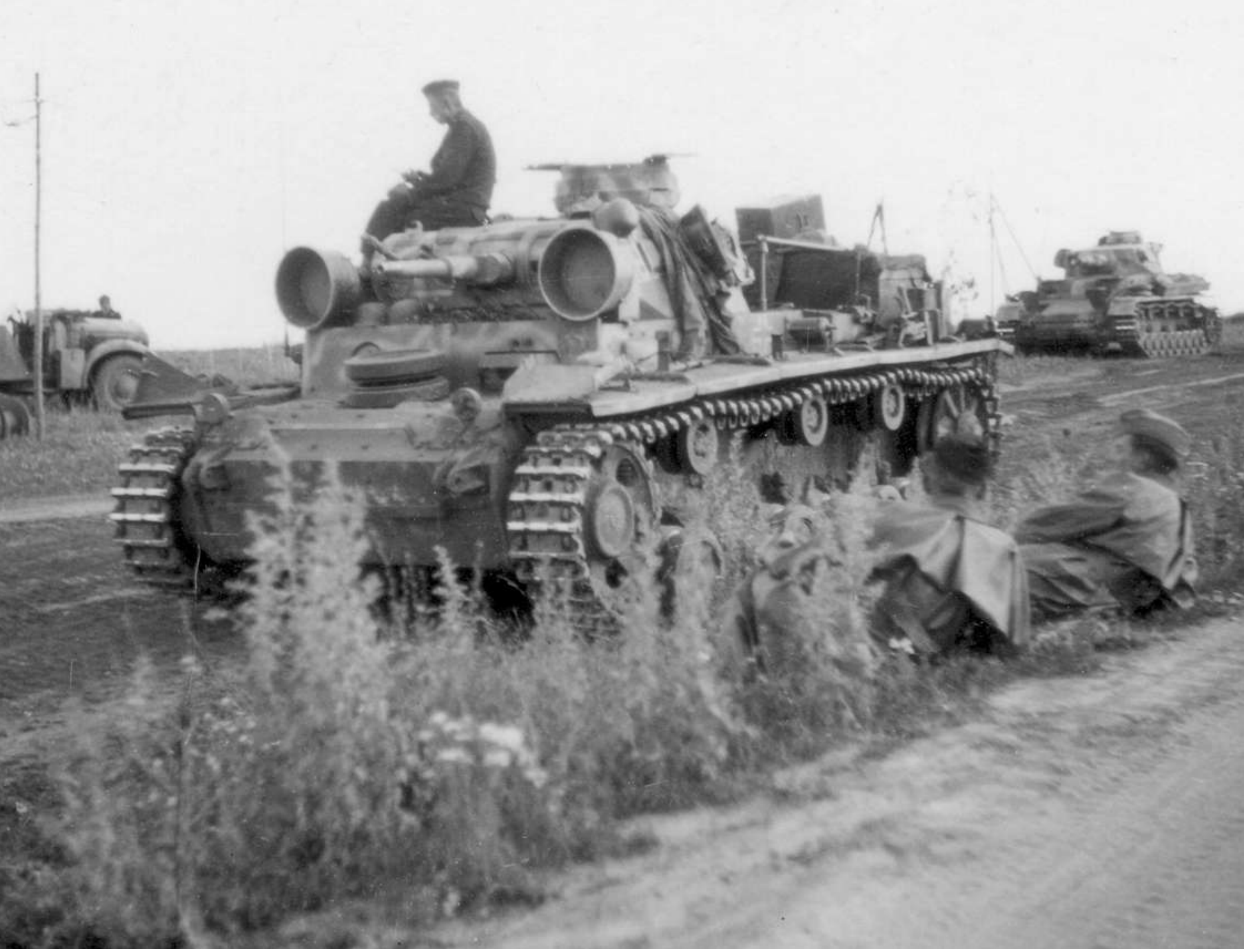
> II.) Organizational measures
> 1.) General measures: For all troops new KStN and KAN adequate to the situation will be published. These new structures represent an adaption of the organization of the army to the current situation of motorized vehicles.
> 2.) *Schnelle Verbände*** All Panzer- and *Infanteriedivsionen* are to be reorganized according to Attachment 1.
> Details:
> a) All PzDiv have to be reorganized to have one PzRgt with two *Abteilung* each with two light PzKp and one medium PzKp.

(** The *schnelle Verbände* or *schnelle Truppen* [rapid forces] came into being in 1938. They were formed from the *Panzerinfanterie*, *Panzertruppen*, *Panzerjäger*, *Aufklärung* [reconnaissance], *Reiterei* [cavalry], *Ersatztruppen* [replacement units] and the schools/training units.)

On 1 November 1941, new organizational structures were produced and subsequently published. The companies were to be issued with any tanks available at the front or those newly delivered. Indeed there were still a number of 3.7cm and 5cm KwK L/42-armed PzKpfw III; the new PzKpfw III (lang) were delivered in strictly regulated numbers to the front-line units. Some units including 8.PzDiv, 19.PzDiv, 20.PzDiv and 22.PzDiv still had PzKpfw 38(t) in their *leichte Kompanien* (le Kp – light companies), although the type was rated as obsolete in regard to main ordnance and armour protection. PzKpfw IV armed with a 7.5cm KwK L/24 was issued until the new PzKpfw IV lang was available. When production of the PzKpfw IV armed with a 7.5cm KwK L/43 began they were delivered, as with the PzKpfw III (lang), at a slow rate and distributed to units in strictly regulated numbers. Priority was given to new units being established and replacement deliveries.

Both *leichte Panzerkompanie* (KStN 1171) and *mittlere Panzerkompanie* (KStN 1175) were adapted to this structure. At a first glance the changes were not serious. However, in reaction to the difficult terrain and combat experience in the east, a workshop platoon equipped with two *Sonderkraftfahrzug* (SdKfz – special purpose vehicle) 10 half-track vehicles was now included. The *leichte Zug* (le Zg – light platoon) remained basically unchanged, although the unpopular PzKpfw II was commonly rejected. However, as production of the type ran until June/July 1942, they continued to be issued to front-line units. Compared to previous structures, the number of tanks remained unchanged. The decrease in the number of supply vehicles is evident; instead of the previous 11 medium 3-ton trucks issued, only six were authorized.

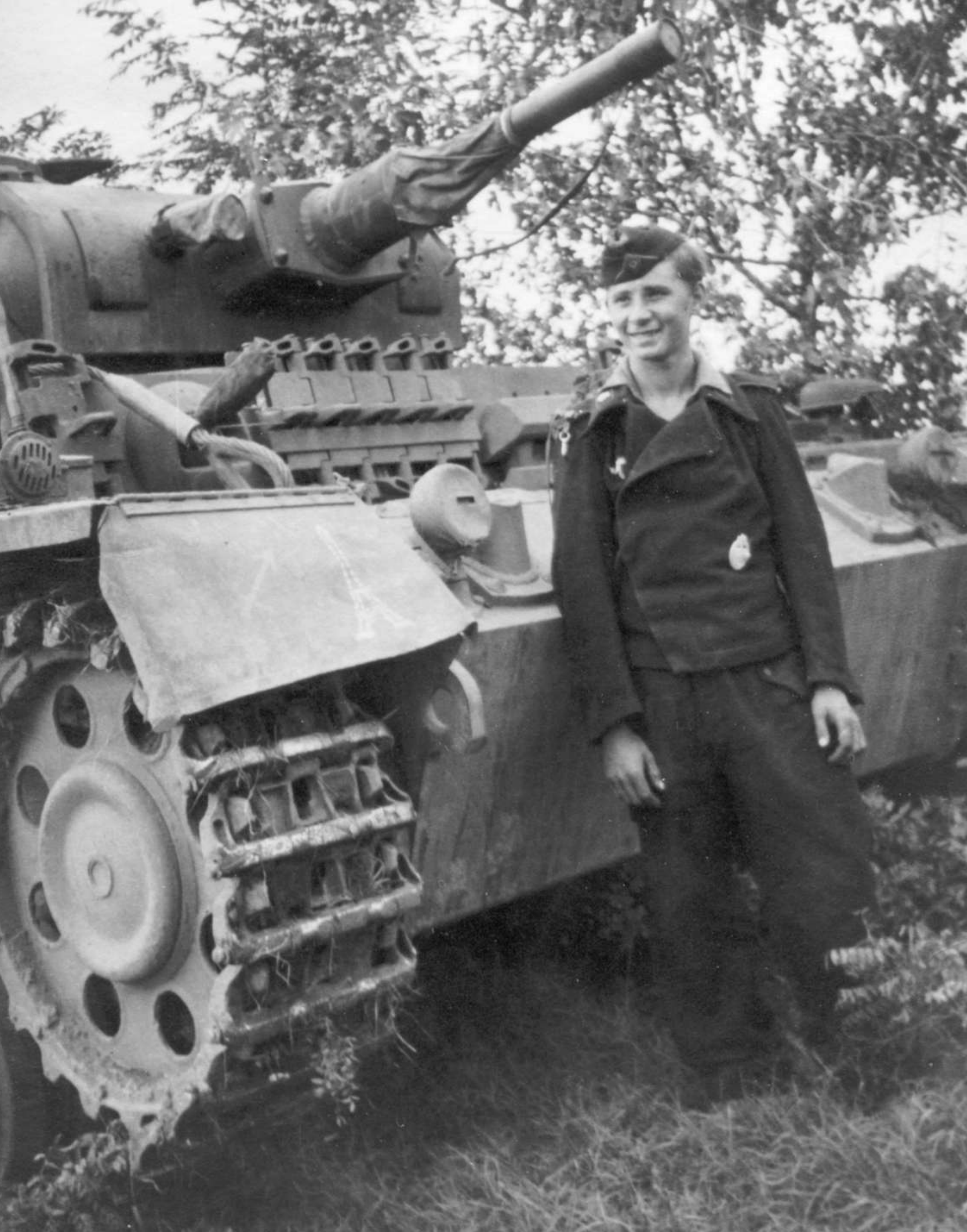
The supply of ammunition and fuel became the responsibility of the staff company, resulting in more economies. The structures were harmonized, and both le and m Kp had identical combat convoys.



(The presentation format of the structures changed repeatedly during the war. Also, and possibly due to the increasing numbers of armoured vehicles, the simple geometric tactical symbols were replaced by a more simplified type.)

Again, it must be clear that all these changes were introduced at the production facilities in Germany. The Schell-Plan, the standardization of truck types from more than 100 to some 20, was not completely implemented as trucks were in short supply. Always-present combat losses also aggravated a units' reserve of equipment. So it is likely that due to delivery problems the new structures were only a clue as to how the field units should be formed. Failed or destroyed vehicles required regular adjustments to the sub-units in a division.

Above:
A number of command tanks were modified for psychological warfare: A PzBefWg Ausf H from an unidentified unit has been equipped with loudspeakers for broadcasting propaganda to Soviet troops dug-in on the frontline. The Soviets often retaliated with their own 'information'. (Anderson)



CHAPTER 2

FALL BLAU: INTO THE CAUCASUS

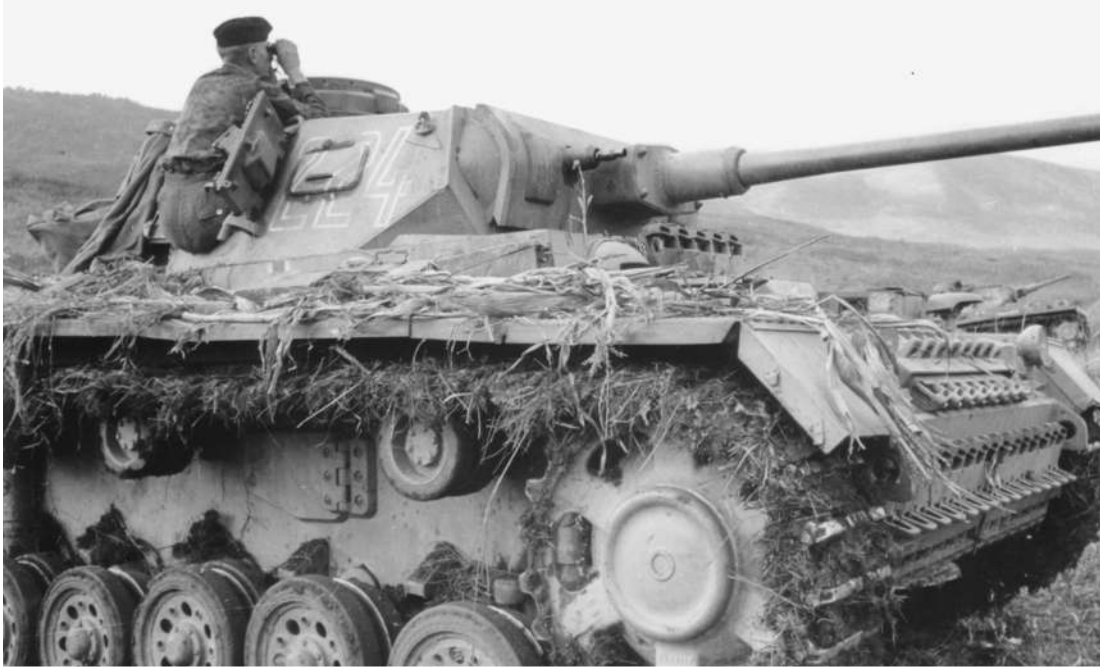
In early 1942, tank production in Germany was running at full speed. However, when compared to the performance of the US or Russian armament industries, the available output was far too low to replace battle losses and at the same time provide tanks for the new units being established. Reality for the *Panzertruppe* on the eastern front meant that the force had to cope with the lack of spare parts and the poor supply of replacement tanks.

Light companies (leKp) which at the time were usually equipped with PzKpfw IIIs (a growing number mounting the 5cm KwK 39 L/60 gun), were also to be issued with PzKpfw 38(t). By 1942 standards, the Czech-built tank was considered to be obsolete, but remained in production until summer that year. A further problem was that the newly-established *mittlere Panzerkompanien* (m PzKp – medium tank companies) were normally authorized to have four PzKpfw IV in each *Zug* (platoon) plus two in the staff section. However, this theoretical strength could never be fulfilled. Quite often only ten were issued, which meant that the 3.*Zug* was removed or the number of tanks in each platoon was reduced. In some cases other types were issued to compensate for the lack of PzKpfw IV.

Production of the PzKpfw III Ausf L began in December 1941. The tank was armed with the 5cm KwK 39 L/60, which when firing the PzGr 40 round was sufficiently powerful to defeat a modern Soviet tank at a range of 100 to 500m.

Of far greater importance for the technically inferior *Panzertruppe* was the introduction of the 7.5cm KwK 40 L/43, which began to be mounted in all production PzKpfw IV from April/May 1942. This long-barreled (*Langrohr* – lang – long) gun had very good ballistic performance, even when firing the PzGr 39. Using this ammunition, both the KV-1 and T-34 could be defeated

Left:
A PzKpfw III Ausf J of 23.PzDiv: The vehicle is fitted with a front-drive sprocket from an Ausf F designed for a 36cm track, but has had to be modified to run the 40cm track. The main gun and ancillary weapons are fitted with protective dust covers, essential for the dry conditions found in the Caucasus. The official divisional emblem of 23.PzDiv, a yellow dart, has been stencilled on the right-hand track guard. Beside it is their unofficial emblem, an Eiffel Tower, used because the unit was established near Paris in early 1942. (Anderson)



Above:
A PzKpfw III Ausf J (lang) of 5.SS-PzDiv Wiking during the advance toward the Caucasus. Note the vehicle has a crew-escape hatch in the side of the hull; these were deleted on later models. (Anderson)

at ranges up to 1,500m. Troop commanders were happy to receive both PzKpfw III Ausf L and PzKpfw IV Ausf G, although only small numbers of the latter were allotted to the medium companies. Troop commanders would normally add the suffix lang: i.e. PzKpfw III (lang) PzKpfw IV (lang).

Ordnance office acceptance figures 1942	PzKpfw III 5cm KwK 39 L/60	PzKpfw III 7.5cm KwK L/24	PzKpfw IV 7.5cm KwK L/24	PzKpfw IV 7.5cm KwK 40 L/43
January	64	0	65	0
February	122	0	53	0
March	186	0	28	0
April	194	0	4 (rebuilt)	75
May	198	0	14 (rebuilt)	286
June	278	0	11 (rebuilt)	72
July	172	21	19 (rebuilt)	80
August	105	167	24 (rebuilt)	94
September	186		unknown	90
October	188		unknown	99
November	178		unknown	113
December	221		unknown	155

However, both tanks were issued to combat units at a slow pace. By the beginning of the summer offensive, 546 PzKpfw III (lang) and 122 PzKpfw IV lang) had been delivered to front-line units, some of which were sent to North Africa.

In mid-1942, the combat value of the PzKpfw III Ausf L was officially downgraded. For this reason it was decided to remove the long-barreled gun and install a 7.5cm KwK L/24, which was available in sufficient numbers due to the PzKpfw IV mounting the 7.5cm KwK 40 L/43.

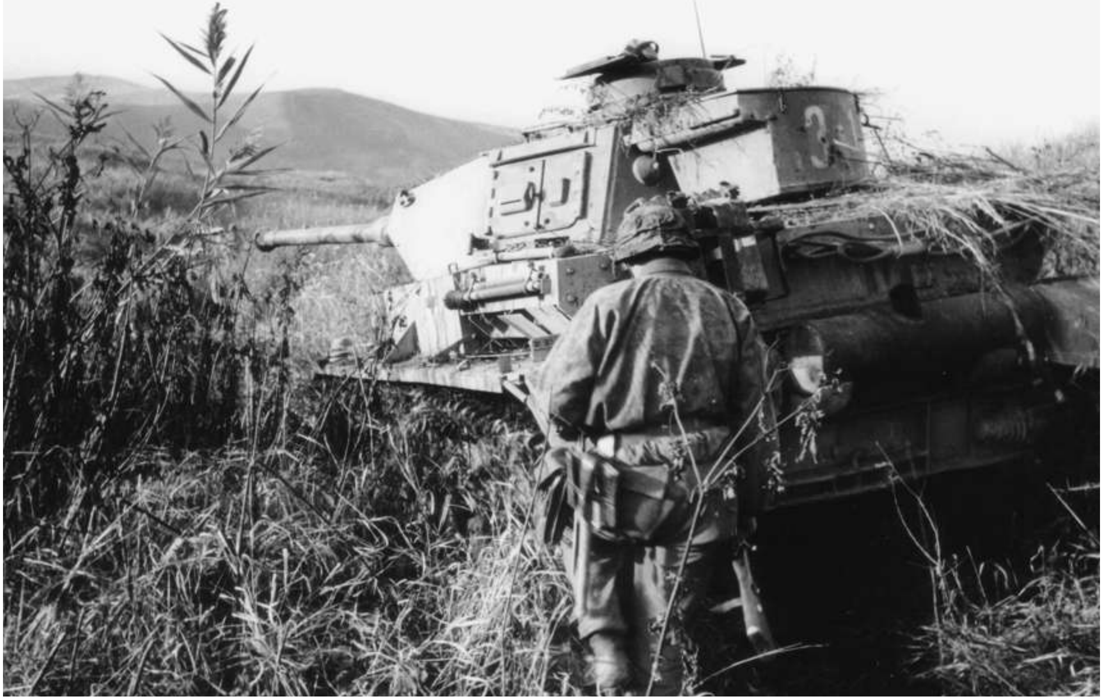
Some 600 (including rebuilt older versions) PzKpfw III Ausf N, armed with the 7.5cm KwK L/24, had been produced by mid-1943. By using the GrPatr 38 HL/B round, at close and medium range, armour penetration was significantly increased. Furthermore, the heavier shell gave an improved range which allowed a larger variety of targets to be attacked. High-explosive (HE) ammunition was also used, and a smoke shell was available to screen an attack or retreat.

These vehicles were to be allotted to a light company in platoon strength (five tanks). Later, Tiger units were also allocated a number of PzKpfw III Ausf N to equip their light platoon.

Tanks for the Waffen-SS

In January 1942, it was decided to equip the SS-formations with an armoured component. Until this date, the nine Waffen-SS units (Leibstandarte Adolf Hitler [LSAH], Das Reich, Totenkopf, Wiking, SS-*Polizei* [SS-Police], Nord,

Below:
The 5cm long-barreled gun gave PzKpfw III crews a better chance of defeating modern Soviet tanks at ranges under 500m. But, great caution had to be taken as the 50mm frontal armour would be penetrated by a direct hit from a Soviet 76.2mm gun. (Anderson)



Above:
In late summer 1942, 5.SS-PzDiv Wiking received their first PzKpfw IV (lang); a PzKpfw IV Ausf F2/G. The new model mounted the 7.5cm KwK L/43 gun which, for the first time, gave German tank crews a clear advantage when fighting Soviet T-34 and KV tanks. But the early PzKpfw IV (lang) remained vulnerable as frontal armour was still only 50mm thick. (Anderson)

and three further brigades) were well-trained and equipped infantry forces. For LSAH, Das Reich and Totenkopf it was ordered that all were to be re-formed as *Panzergrenadier-Divsionen*, (PzGrDiv) without changing their official designation. As noted in the detailed structure of LSAH, one tank battalion and one *Sturmgeschütz-Abteilung* (assault gun battalion) were added which considerably increased combat capability. This was to begin a long-running dispute between the army and the Waffen-SS over who had priority for the limited resources available.

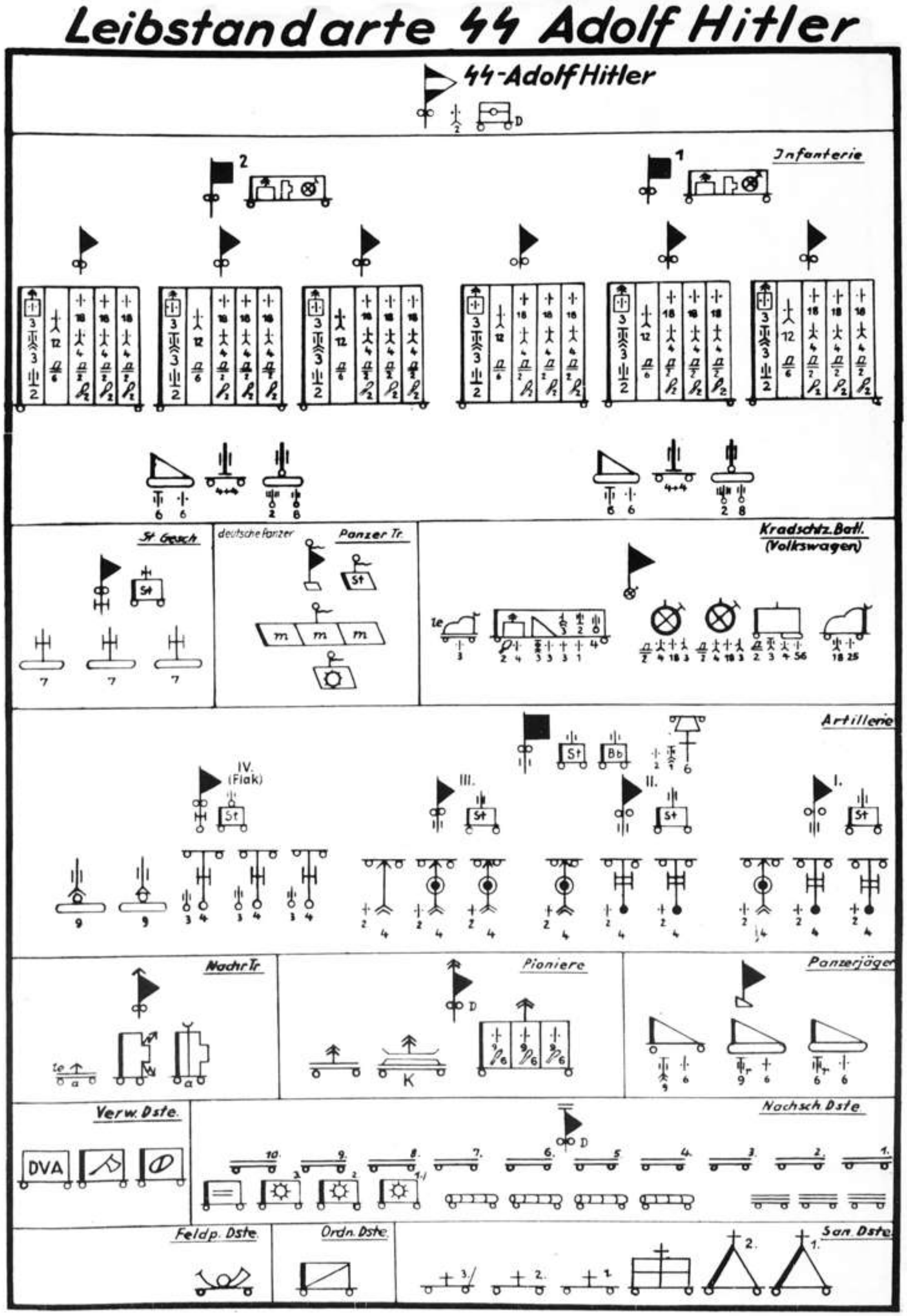
SS-Division LSAH was the first to receive a tank battalion (SS PzAbt 1) made up of three medium companies. A second, initially un-named unit was to be issued with one tank battalion (SS PzAbt 2) formed of two light and one medium company.

Although officially organized according to *Kriegstärkenachweisungen* (KStN – organizational structures) 1171 (1 November 1941) and KStN 1175 (1 November 1941), almost all companies appeared to differ from these structures, a situation caused by the shortage of tanks.

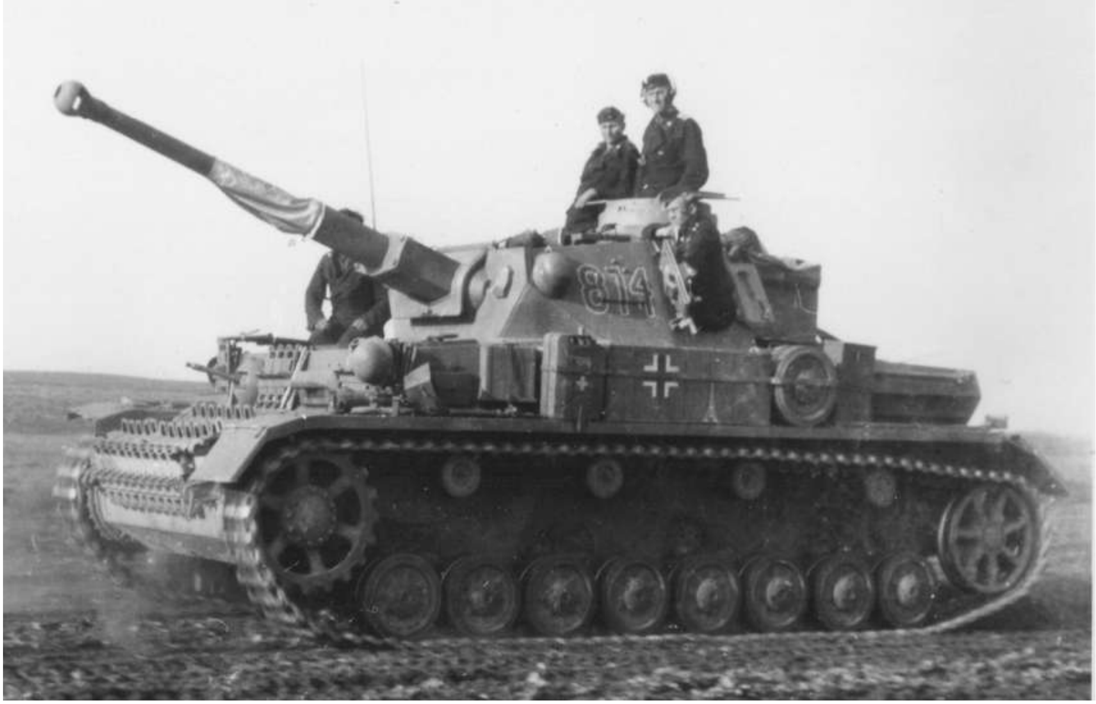
LSAH was sent to France where it later was deployed as part of the occupation force in the south of France. The unit was equipped with three instead of five PzKpfw II for the light platoon, and a medium company with only ten rather than 14 PzKpfw IV.

SS-PzAbt 2 was seconded to SS-Division Das Reich, but in April it was re-designated as SS-PzAbt 5, when it was transferred to SS-Division Wiking. Initially it was equipped with 17 PzKpfw III (no PzKpfw II) in two light companies and one medium company with three PzKpfw II and ten PzKpfw IV.

Organizational Structure LSAH


Leibstandarte ϟϟ Adolf Hitler
ϟϟ-Adolf Hitler
Infanterie
St Gesch
deutsche Panzer
Panzer Tr.
Kradschtz. Batl. (Volkswagen)
Artillerie
IV. (Flak)
III.
II.
I.
St
Bb
Nachr Tr
Pioniere
Panzerjäger
Verw. Dste.
DVA
Nachsch. Dste.
Feldp. Dste.
Ordn. Dste.
San. Dste.

Below:
A PzKpfw IV Ausf F2/G from PzRgt 201 (23. PzDiv); note the Eiffel Tower symbol. The regiment was formed with three battalions, and each company was numbered sequentially from one to nine. The crew has fitted various non-standard carriers for their belongings. (Anderson)



Left:
At the beginning of the 1942 summer offensive, PzRgt 2 of 16.PzDiv had a complement of 18 PzKpfw III armed with the 5cm KwK 39 L/60. Progressively as replacements were delivered, the majority of PzKpfw III in service mounted the long-barreled gun. The divisional emblem has been stencilled at the side the driver's visor. (Wilhelm)

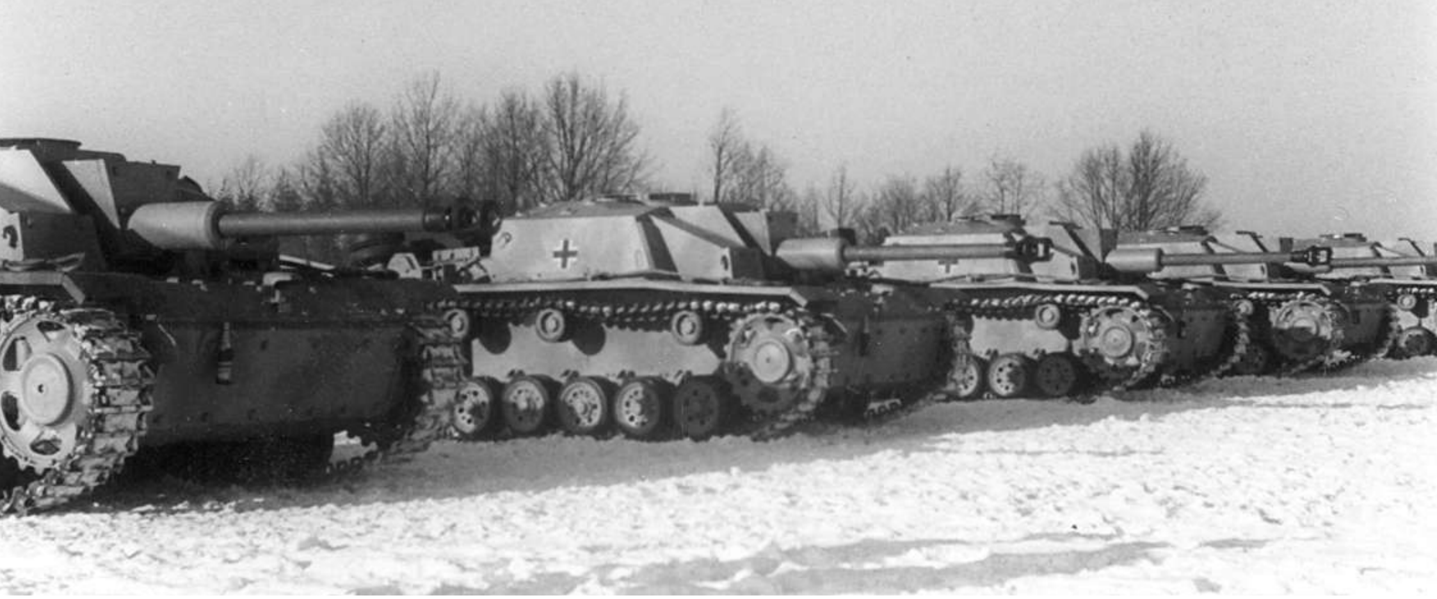
The KStN appear to be of reference value rather than the strict rule. However, SS units were the first to abolish the light company in favour of a medium, an important step as the *Langrohr*-armed PzKpfw IV was about to enter service.

Beutepanzer

By the end of 1940, large numbers of French *Beutepanzer* (captured tank) and, to a lesser extent, British tanks and trucks had been collected were now available from storage compounds. It is certainly no exaggeration to note that without the captured soft-skinned vehicles, the German advance to Moscow would have taken a different course. French trucks and prime movers were vital to the German military; production of many types continued in occupied France after 1940.

The captured medium and heavy French tanks (an estimated 800 R-35, 600 H-35 and H-39, 300 S-35 and 160 B1), were collected and mechanically examined. Many were then refurbished; with some small modifications, such as a Panzer-type commander's cupola and then repainted with German markings.

The available material was then used to establish *Beutepanzer* units. Due to the relative inferiority of these outdated tanks, most of the units would



Above:
Among the first units to receive an integral *Sturmgeschütz-Abteilung* was 2.SS-PzDiv Das Reich. A line of newly-delivered Ausf G from the December 1942 production batch have bottles of champagne hanging on the front plate ready for their 'baptism' into service. (Anderson)

soon be re-equipped with German tanks as and when they became available. The following captured tank-equipped PzRgt were allotted to larger units, PzRgt 204 to the 22.PzDiv (September 1941) and PzRgt 201 to the 23.PzDiv (December 1941). PzRgt 203 was initially transferred to *Heeresgruppe Nord* (Army Group North) as an army troop, and later integrated with *Infanteriedivision* (InfDiv) Grossdeutschland and 1.PzDiv (January 1943). PzRgt 202 was separated; I.*Abteilung* was dispatched to Serbia to support the occupation, and II.*Abteilung* was integrated with 26.PzDiv in September 1942.

After many units had re-equipped with German tanks, those *Beutepanzer* that remained available were issued to other units, usually in company strength only. Many were deployed the Balkans and Russia in the fight against partisan forces; others were used by German occupation forces on the Channel Island, France and the Low Countries, also Norway. Of special note is SS PzAbt 7, which was deployed to the Balkans.

The Parpach position

During the initial stage of *Unternehmen* (Operation) Barbarossa, *Heeresgruppe Süd* (Army Group South) had advanced into the Crimea, but had avoided the fortress city of Sebastopol. On 5 December 1941, Soviet forces launched an attack as the prelude to their winter offensive. The Kerch peninsular, a piece of land of some 100km length in the south, was recaptured by Soviet forces using combined land and naval operations during the harsh winter. German counterattacks pushed Soviet forces back, and near Parpach (the narrowest part of the peninsula) established defensive positions, known as the *Parpatsch-Stellung* (position).

Adolf Hitler had already ordered a large offensive operation to be launched in the summer of 1942 to advance southeast to the Caucasus; all possible obstructions had to be eliminated. However, the balance of power was in favour of the Soviets: One German army had to fight against three Soviet armies.

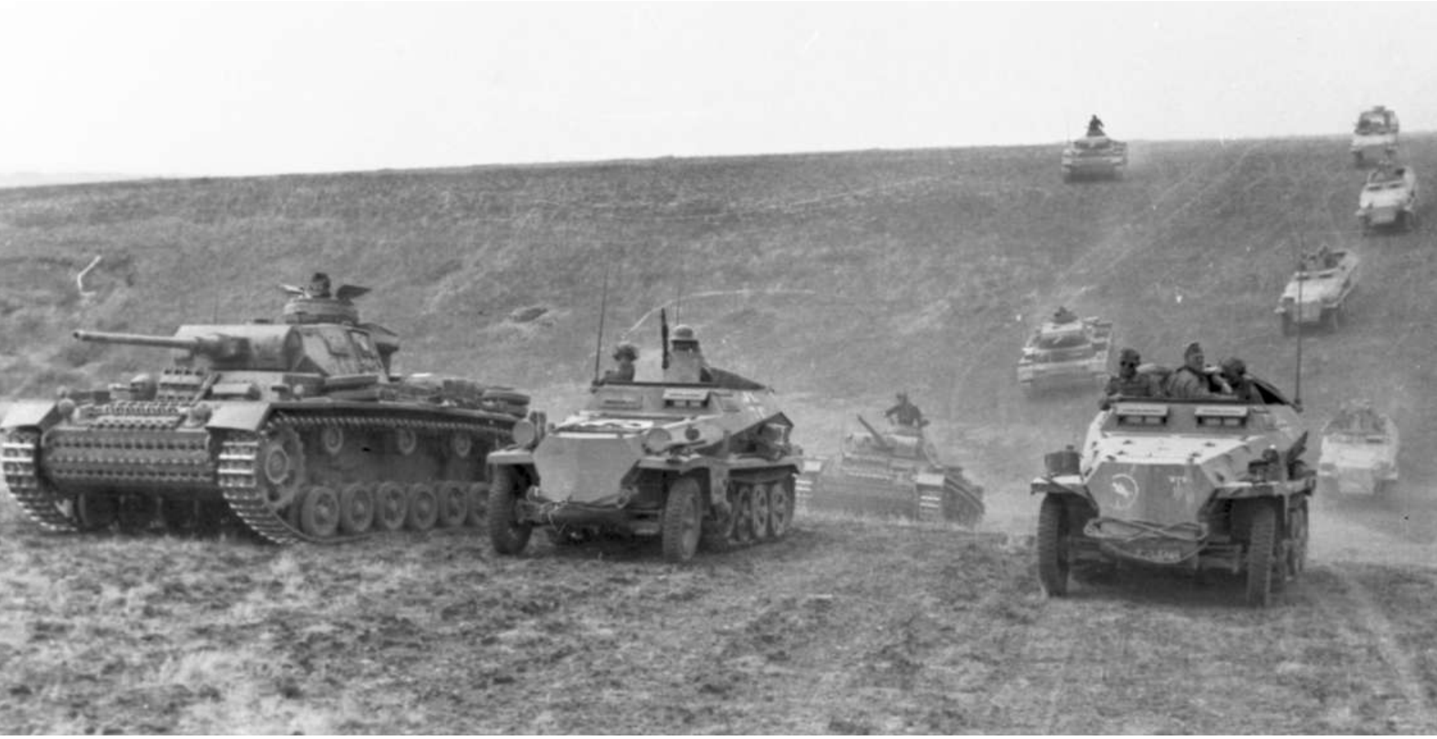
The Kerch peninsular, a relative narrow piece of land, did not allow for a pincer-type assault. However, the Germans intended that the attack was not to force a retreat but to totally annihilate the Soviet defenders.

Unternehmen Trappenjagd

During the defence of the Parpach position 22.PzDiv (with PzRgt 204, with two battalions) was part of the German forces allocated to the Crimea. On 3 March, III.*Abteilung* was established by order of the *Befehlshaber des Ersatzheeres* (BdE – commander of the replacement army) and was to be combat ready by mid-April. A further unit, StuGAbt 190, was to reinforce the division.

The order for the establishment of III.Abt/PzRgt 204 showed some peculiarities. The newly established battalion had been issued with two light companies (KStN 1171 dated 1 November 1941) and one *schwere Kompanie*

Below: A *Sturmgeschütz-Abteilung* was also allotted to 3.SS-PzDiv Totenkopf. The commander and the loader of a *Sturmgeschütz* Ausf F/8 are listening to radio traffic while observing the battlefront. (Anderson)



Above:
Elements of 24.PzDiv (a former cavalry unit) advancing on Stalingrad in summer 1942: At the time the division had a complement of 56 PzKpfw III (lang). The *leichte Schützenpanzerwagen* (le SPW – light armoured half-track vehicle) SdKfz 250 on the right is from the division's artillery regiment, the centre SdKfz 250 is possibly a reconnaissance vehicle from the *Kradschützen* (motorcycle battalion). (Bundesarchiv)

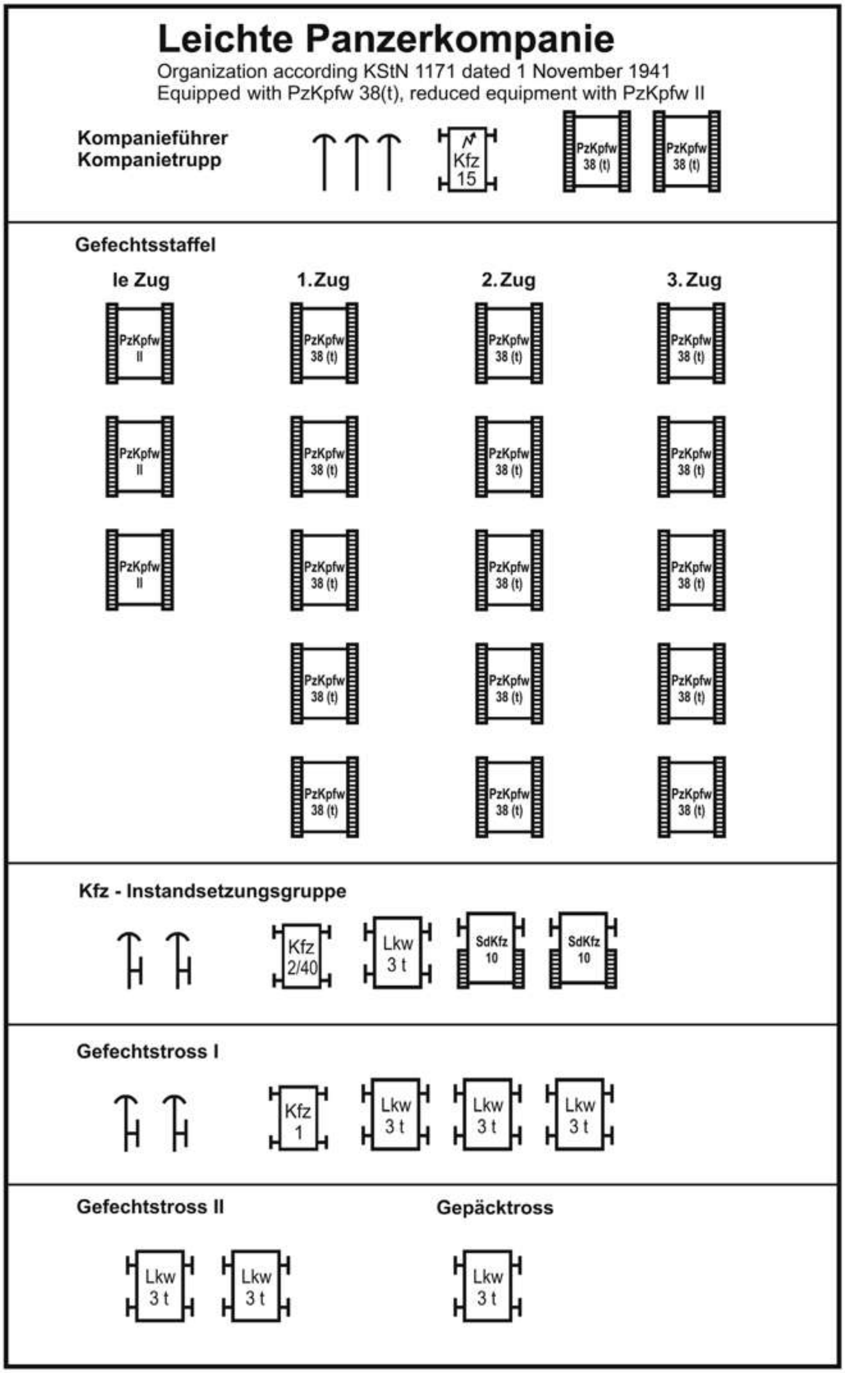
(heavy company) (KStN 1175 dated 1 November 1941). The ever-present shortage of tanks was obvious, as evidenced by the unit's equipment. All light companies were equipped with five PzKpfw 38(t) instead of PzKpfw III; the heavy company had only two platoons each with four PzKpfw IV and two in the *Kompanietrupp* (company troop). The number of PzKpfw III tanks was also reduced.

An entry in the war diary of 22.PzDiv dated 16 March 1942, noted:

> Army order for the attack on 20 March 1942
>
> All attempts by the enemy to force a breakthrough by expending an immense amount of ammunition and a large force of tanks failed due to the courageous resistance by our own troops. It is vital, to hold the front until the army can launch a counterattack. XXXXII.*Armeekorps* will attack on X-day using 22.PzDiv.
> The aim is to encircle and annihilate all enemy forces.

On 21 March, after this limited attack, the commander of XXXXII.*Armeekorps* reported that 216 enemy tanks had been destroyed in the last seven days. This was achieved without *Langrohr*-armed tanks or *Sturmgeschütz*; a further example of superior German tactics.

Light Panzer Company


Leichte Panzerkompanie
Organization according KStN 1171 dated 1 November 1941
Equipped with PzKpfw 38(t), reduced equipment with PzKpfw II
Kompanieführer
Kompanietrupp
Kfz 15
PzKpfw 38 (t)
PzKpfw 38 (t)
Gefechtsstaffel
le Zug
1. Zug
2. Zug
3. Zug
PzKpfw II
PzKpfw II
PzKpfw II
PzKpfw 38 (t)
Kfz - Instandsetzungsgruppe
Kfz 2/40
Lkw 3 t
SdKfz 10
SdKfz 10
Gefechtstross I
Kfz 1
Lkw 3 t
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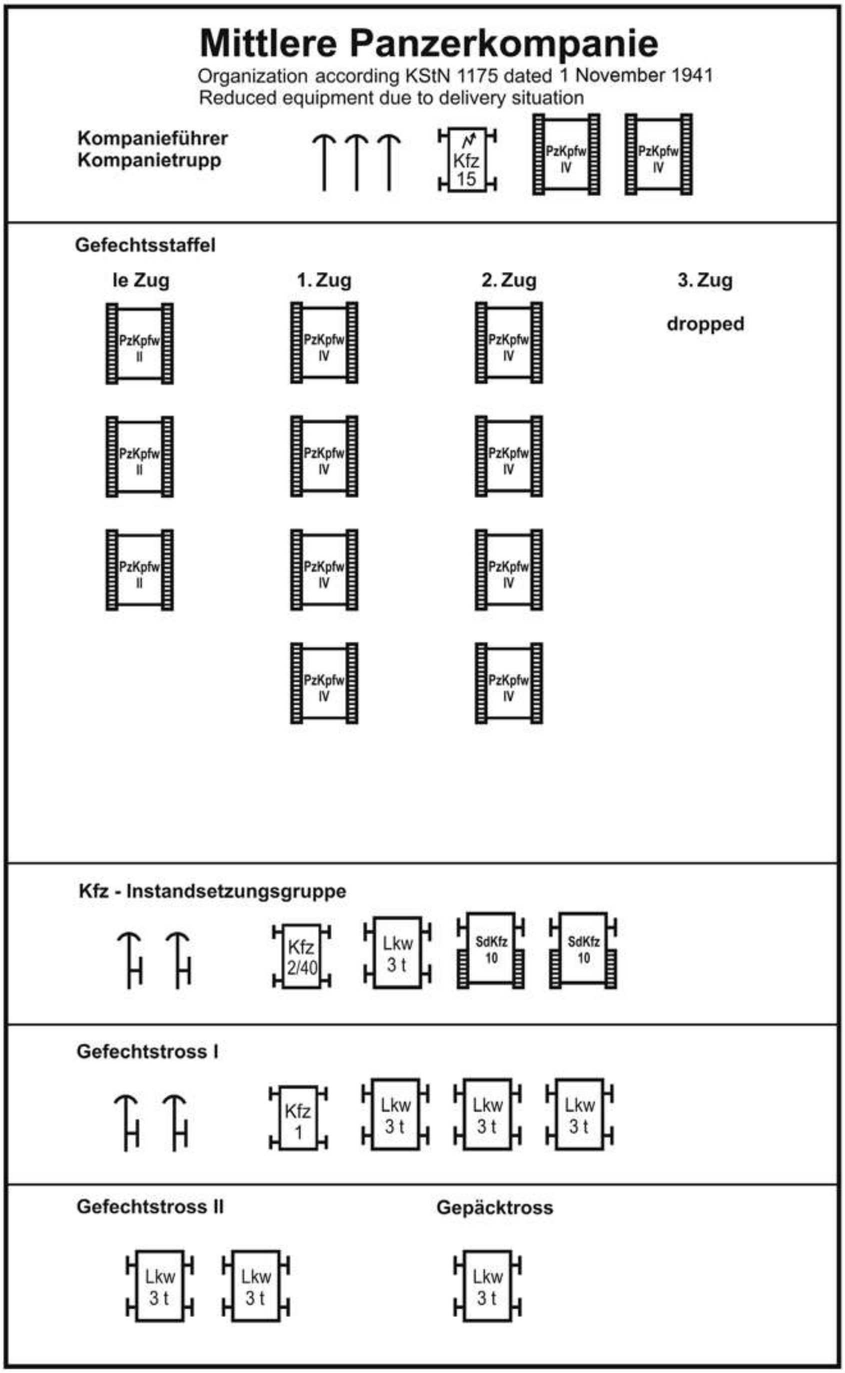
Gefechtstross II
Lkw 3 t
Lkw 3 t
Gepäcktross
Lkw 3 t

Medium Panzer Company


Mittlere Panzerkompanie
Organization according KStN 1175 dated 1 November 1941
Reduced equipment due to delivery situation
Kompanieführer
Kompanietrupp
Kfz 15
PzKpfw IV
PzKpfw IV
Gefechtsstaffel
le Zug
1. Zug
2. Zug
3. Zug
dropped
PzKpfw II
PzKpfw IV
Kfz - Instandsetzungsgruppe
Kfz 2/40
Lkw 3 t
SdKfz 10
SdKfz 10
Gefechtstross I
Kfz 1
Lkw 3 t
Lkw 3 t
Lkw 3 t
Gefechtstross II
Lkw 3 t
Lkw 3 t
Gepäcktross
Lkw 3 t

Above:
Two tank commanders from 3.PzDiv discuss the battlefield situation with a high ranking infantry officer. Tanks crews camouflaged their vehicles by applying a coating of earth mixed with water over the standard dark grey, in an attempt to match the land conditions in the south of Russia. (Anderson)

Three days later, PzRgt 204 reported the following losses to the staff company of 22.PzDiv:

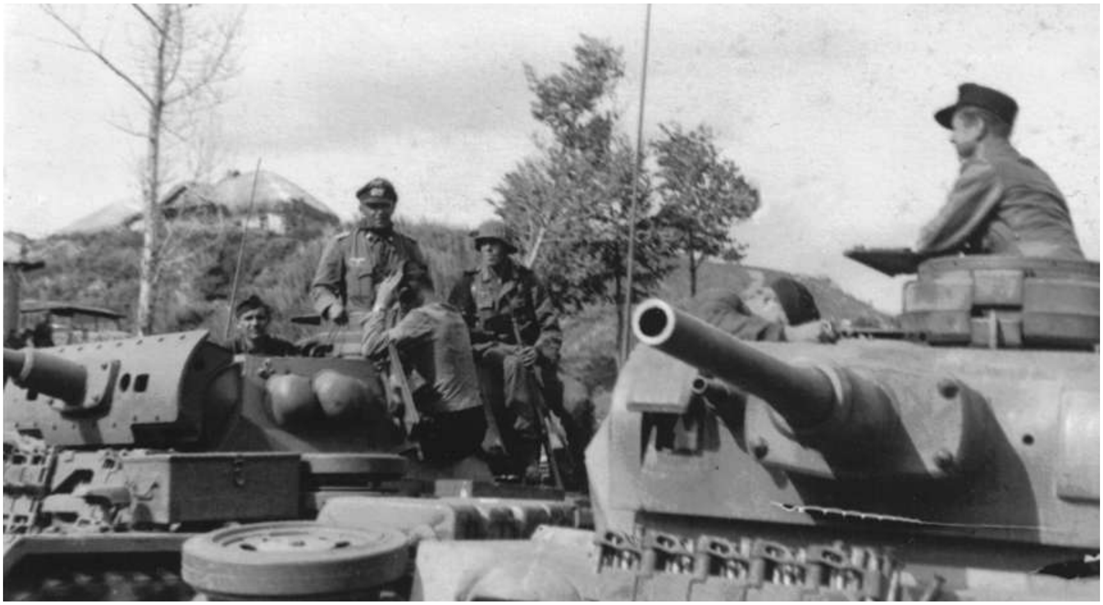
> Total tanks losses
>
> The state of the 33 tanks abandoned in front of our own positions is as follows:
>
> a) Two PzKpfw II
> Six PzKpfw 38(t)
> One PzKpfw IV
> All have been damaged by enemy fire or are burnt out to such an extent that any repair seems to be impossible.
> b) Five PzKpfw II
> Ten PzKpfw 38(t)
> Three PzKpfw IV
> All are heavily damaged, but can be repaired by taking parts from other vehicles.
> c) Three PzKpfw II
> One PzKpfw 38(t)
> Two PzKpfw IV
> These became stuck in mud or were lightly damaged, all can be made operational.

> During the course of the first assault some tanks could be recovered and that the majority of failed or damaged tanks can be repaired; orders to destroy the vehicles were not given. Attempts to recover the tanks, during the following night, failed due to heavy fire from the enemy.

A large part of the Soviet tank forces positioned in the southern region were equipped with tanks supplied under the Lend-Lease Program. It is interesting to note that the Soviets were very selective in the allotment of types to their front-line tank forces; they considered the combat value of this equipment to be lower when compared to their own. Furthermore, many German after action reports noted that numbers of obsolete Soviet tanks such as the T-26 continued to be used until 1943/44. Apparently a larger proportion of the more effective T-34 and KV tanks were allocated to forces fighting in the western and northern theatres. Sadly, the author can give no exact figures.

The intelligence officer of PzRgt 204, reported after interrogating two POWs:

> PzRgt 204, Battalion Intelligence Officer, 21 April 1942:
>
> Interrogation of two deserters from the [Soviet] 39.Tank Brigade
>
> The 39.Tank Brigade attacked on 9 April with the following vehicles: 28 T-60, one T-34, and five or six KV… After the mission six T-60, one combat ready KV, two KV with damaged running gear returned; the T-34 was hauled back with a burnt-out engine. The returning crews mentioned that many tanks failed due to the poor weather conditions. They considered the



Below:
Two PzKpfw III of PzRgt 6, 3.PzDiv: At left is an Ausf L (mounting the long-barreled L/60 gun) which has been up-armoured with spaced armour over the gun mantlet. The vehicle to the right is an Ausf J mounting a 5cm KwK L/42. (Anderson)

Above:
Two PzKpfw III (lang) of 24.PzDiv (note the divisional emblem; a leaping horse) in a Russian village during a break for servicing: The daily continuous running to cover the vast distance to Stalingrad put a heavy mechanical strain on tanks and vehicles, and this required the workshop and recovery services to be permanently in action. Many PzKpfw III in the unit were also loaded with heavy baggage which exacerbated the problem. (Bundesarchiv)

> *Panzergranate* 40 (the prisoners gave the exact designation) as most dangerous, since it was able to penetrate even the T-34. New T-34 tanks delivered to the brigade were to have petrol engines. The reason was that the engine factory in Kharkov had been evacuated, and that any remaining diesel engines are only to be installed in the KV. The petrol engine would need more fuel and tend to ignite easily. The new type [T-34, author] would have frontal armour reinforced to 80mm. There would be no rubber tyres on the running wheels, also they would be delivered without an observation periscope, and only a few vehicles had radio equipment. The latest tanks are poorly manufactured and as quality decreased, failures due to mechanical faults increased considerably. The quality of fuel decreased alarmingly… The T-60 is known as the "two-man coffin".

Their statement reveals some interesting details, although their veracity can certainly be doubted in parts; deliberate lies, ignorance or the wish to survive might have influenced their stories. For instance, their statement that new T-34s were going to be delivered with petrol engines cannot be corroborated. However, it is true that T-34s assembled at the Stalingradski Tractorni Zavod (STZ) facility were fitted with extra armour to reinforce the frontal protection.

As for German forces, the new long-barreled 7.5cm KwK 40 L/43 (also StuK 40) became available at around this time, either mounted in the *Sturmgeschütz* or PzKpfw IV.

On 8 May 1942, German units, supported by Bulgarian allies, launched a surprise attack on the Soviet frontline to take the Parpach position. In the southern sector, after the anti-tank ditch had been crossed, the 22.PzDiv moved quickly north and advanced to the Sea of Azov. On 11 May, Soviet forces had been completely encircled. Three days later, the city of Kerch was taken and all the Soviet defenders captured.

In the meantime, PzRgt 204 had received reinforcements to replace its losses, among which were PzKpfw III and IV mounting the long-barreled gun. On 20 May 1942, a special unit from *Oberkommando des Heeres* (OKH) and *Waffenamt* (Wa) submitted an assessment report on the new weapon:

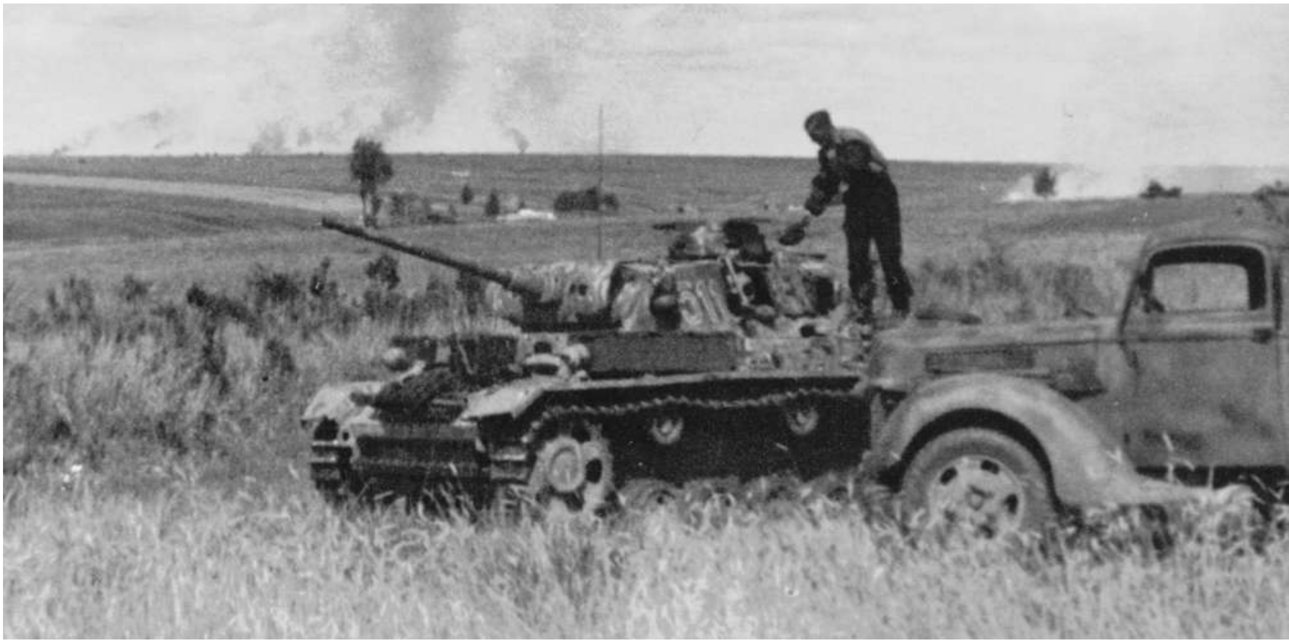
> Report on the commitment of tanks with new ordnance:
>
> 1.) The successful advance of 22.PzDiv north from Arma-Eli was significantly influenced by the availability of these new weapons.
> 2.) PzRgt 204 (with 12 PzKpfw IV [KwK 40] and 20 PzKpfw III [KwK 39]. A total of 50 Russian tanks, among them 12 KV and two or three T-34s were destroyed.
> The KwK 40 was used at ranges of up to 1,200m. The KwK 39 was used successful against KV up to ranges of 400m.
> StuGAbt 190 (with six StuK 40s):
> Effectiveness of the weapon is identical to the KwK 40 in the PzKpfw IV. On average, the six new *Sturmgeschütz* destroyed three Russian tanks each.
> 3.) Examination of the destroyed Russian tanks:
> Ten KV tanks and three T-34s were examined on the battlefield. Most of the KVs and T-34s showed clear penetrations by 7.5cm rounds. Many were on the turret front and the sides of the hull. The majority of the vehicles had burnt out; a lot of damage was observed to the running gear.
> 4.) Defects in the new weapons:
> KwK 40 and StuK 40
> During the battle there were problems ejecting spent cartridge cases, which affected the rate of fire. On some occasions a case had to be cleared by pushing it out through the gun barrel from outside the tank. The problem has to be quickly analyzed and rectified.
> 5.) Ammunition:
> Both the PzGrPatr 39 and 40 have fulfilled expectations. When questioned, all commanders and crews stated that a direct hit resulted in the total destruction of an enemy tank. The PzGrPatr 40 was used only occasionally, since the PzGrPatr 39 proved to be sufficient at all combat ranges.
> 6.) Verdict:
> The new ordnance has proven to be very effective in combat. The crews have unanimously declared that they now have superiority over the Russian heavy tanks.

Above:
Although no markings are visible, a *Panzerbefehlswagen* (command tank) – the frame aerial is just visible – of 3.PzDiv crosses a field of ripening cereals. Motorcycle-dispatch riders make use of the paths made by the tanks. (Anderson)

This report testifies to the effectiveness of the new ordnance for both the PzKpfw III (5cm KwK 39 L/60) and the PzKfw IV (7.5cm KwK 40 L/43). PzRgt 204 was issued with one platoon of four PzKpfw IV (lang) in each battalion and any PzKpfw 38(t) lost in action was replaced by a PzKpfw III (lang).

A comprehensive after action report from *Armeeoberkommando* (AOK) 11, dated 31 May 1942:

> Experiences made during the breakthrough of the *Parpatsch-Stellung*:
>
> Introduction
> We have to consider that the army had plenty of time to prepare for the advance during the defensive fighting. By using a limited number of reconnaissance raids both the terrain and enemy were evaluated, allowing an exact plan for the attack to be decided. This will not be possible once the attack against similar enemy positions has commenced.



Above:
A PzKpfw III (lang) from 3.PzDiv fitted with spaced armour. The unit camouflaged their tanks with a wash made from local mud, in an attempt to blend into the local terrain. The three-digit vehicle number (511) has been left clear. (Anderson)

I. Preparations for the attack

1.) By using air reconnaissance and interrogation of prisoners… enemy positions, their strength and morale of their forces was determined. Also artillery positions and minefields were identified and the terrain evaluated.
2.) Combat patrols in company strength were launched in the area of the planned attack… The units intended for the first attack (infantry and assault guns) were trained against dummy positions resembling the target; this proved to be advantageous. All collated reports have to be distributed to the companies.
3.) Technical preparations
Pioneers will be needed in adequate strength… Mines laid by the Russians were poorly camouflaged. The mine-clearing troops easily cleared paths through these barriers. To find the mines simple detection rods were used.

IV. Assessment of the weapons

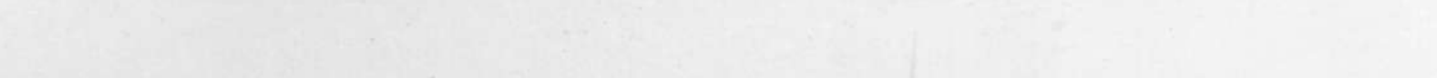
6.) The *Sturmgeschütz* performed superbly over the marshy terrain in support of the combat troops. They provided effective support fire for pioneers clearing mines, also for the infantry during the crossing of the *Panzergraben* [anti-tank ditch], then for holding the bridgehead.
8.) The infantry divisions lacked a weapon able to fight enemy tanks. While breaking through the *Parpatsch-Stellung*, the attached *Sturmgeschütz-Abteilungen* provided adequate anti-tank defence when no German tanks were available. The L/41* [see note] gun of the *Sturmgeschütz*

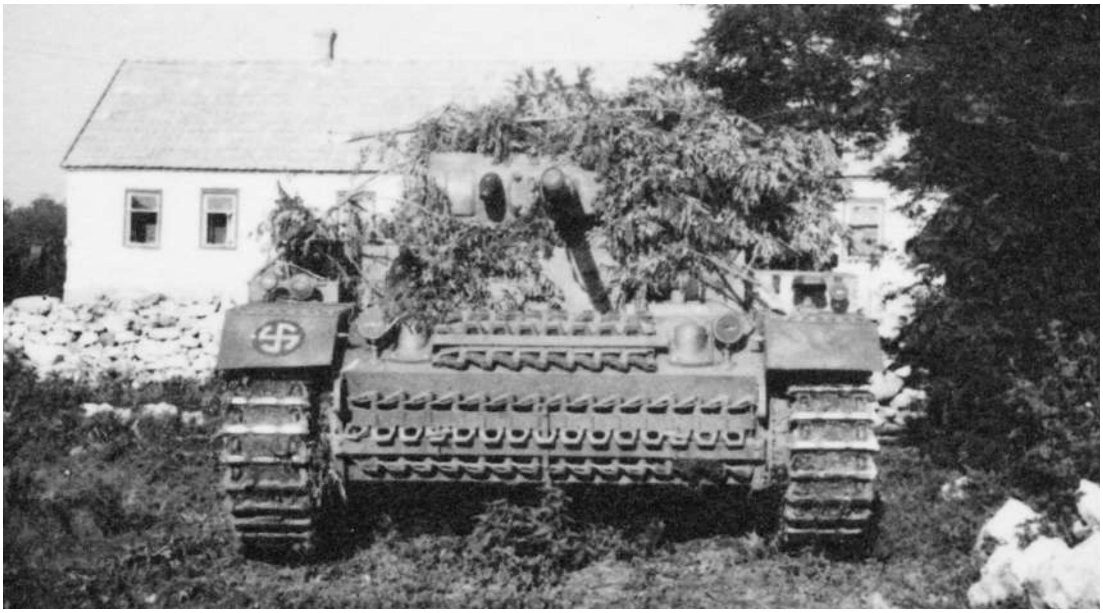
> proved to be effective as an armour-piercing weapon. We request to be supplied with high-explosive ammunition so that the *Langrohr Sturmgeschütz* can fulfill the original tasks of the *Sturmartillerie*.
> The 2.8cm *schwere Panzerbüsche* [s PzB 41] proved to be effective. However, it is ineffective against the KV-1.
> Some 20ltr of fuel was poured into the engine exhausts of a T-34 tank and ignited: No success.
>
> 9.) The success of the 22.PzDiv during the breakthrough of the *Parpatsch-Stellung* and the following advance north was decisively influenced by the new weapons. The troop now has a feeling of superiority over the Russian heavy tanks.

The mention of the L/41 was possibly an error in the transcription and remains a mystery. Although during the development of a long-barreled gun for the *Sturmgeschütz* and the PzKpfw IV, a 7.5cm KwK L/41 gun was manufactured by Krupp, but did not enter production: The *Sturmgeschütz* Ausf F mounting a 7.5cm StuK 40 L/43 was introduced instead. The obvious absence of HE rounds cannot be explained, since this ammunition for the StuK 40 had been available from when it entered service. It is just possible that the Krupp L/41 gun was being evaluated under combat conditions.

Unternehmen Trappenjagd (Operation Bustard Hunt), the surprise attack planned and commanded by *Generaloberst* von Manstein, had

Below:
Vehicles from 3.PzDiv include an SdKfz 251/3 *Funkwagen* (radio vehicle) from the signals echelon of the staff company and three PzKpfw III Ausf M tanks. The SdKfz 251/3 is fitted with a standard frame-type aerial and mounts a 2.8cm *schwere Panzerbüsche* (s PzB – anti-tank cannon). (Anderson)





Above:
This PzKpfw III Ausf J from 5.SS-PzDiv Wiking appears to be armed with a short-barrel 5cm KwK L/42. By 1942, the PzKpfw III had become a valuable battlefield asset, especially when armed with the long-barreled 5cm KwK 39 L/60 gun. The division used a stylized swastika as its emblem (Anderson)

been a strategic masterpiece. By the end of the operation, the Soviet army had lost 28,000 men and some 170,000 were captured. More than 250 tanks and over 1,000 artillery pieces were lost. The Soviet air force, which initially held total air supremacy over the region, lost some 400 aircraft.

German losses were disproportional: 600 men killed, and only three assault guns and eight tanks lost. With the introduction of the 7.5cm KwK 40 and the 7.5cm StuK 40, German forces were able to defeat, to a certain degree, the superior Soviet KV and T-34 tanks.

For *Heeresgruppe Süd*, the way to the Caucasus was now open.

To Stalingrad

The German summer offensive, *Fall Blau* (Plan Blue), began at the end of June 1942 to take advantage of the weather conditions and what was perceived to be a poorly prepared Soviet army. However, the Soviets had assembled significant defensive forces in preparation for an anticipated attack to capture Moscow, the Russian capital.

In July 1942, for the ambitious target of capturing the Caucasus region *Heeresgruppe Süd* was divided in the army groups ‘A’ and ‘B’.

Heeresgruppe A was to advance south into the Caucasus, with the objective of capturing the Baku oil fields.

Heeresgruppe B, with the elite 6.Army, was to secure the flanks to the east. Their first objective was to take the city of Voronezh, some 100km northwest of Stalingrad. Weakened Soviet forces avoided combat and retreated abandoning large areas of the region.

The 9.PzDiv was part of these forces. In June, after re-equipping, the unit was ordered to join *Heeresgruppe* B. After taking Voronezh on 5 July, the group turned southeast and followed the river Don. On 24 July, 9.PzDiv submitted a *Panzerlage* (strength report). Around the same time the reports started to differentiate between tanks with short- or long-barreled guns, due to their different combat values.

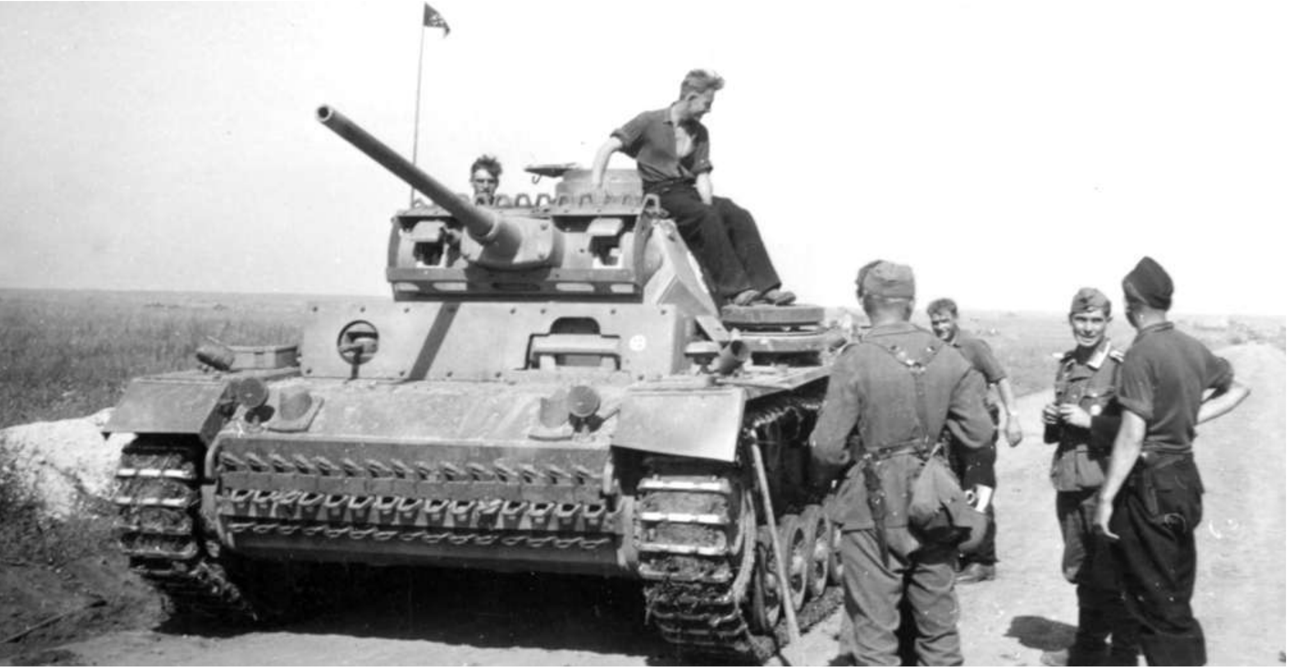
Panzerlage: 9.PzDiv	24 July 1942
PzKpfw II	19
PzKpfw III (k)	31
PzKpfw III (l)	41
PzKpfw IV (k)	1
PzKpfw IV (l)	4
T-34 *Beutepanzer*	2

After Voronezh the unit moved back to Kursk, and was not involved in the fighting of that summer.

From a report of PzRgt 33 of 9.PzDiv:

> The enemy positions between Kursk and Voronezh have been attacked and destroyed by the XXIV.PzKp. The 9.PzDiv captured 2,000 prisoners and destroyed 80 tanks, including heavy and super-heavy, along with countless artillery guns, anti-tank guns and other weaponry.

Below:
A PzKpfw III Ausf L from 13.PzDiv does not have the curved armour plate to cover the gun mantlet. Due to shortages of material, not all tanks could be fitted with complete sets of spaced armour. Note the *Schützenmine* (S-mine – anti-personnel mine) launcher fitted on the track guards; a rare feature on a PzKpfw III. (Münch)



Above: An unidentified unit equipped with newly-delivered PzKpfw III Ausf L during establishment or re-equipping in occupied France. The third tank, an Ausf E or F, is armed with a 3.7cm KwK, but does not appear to be a command tank. (Anderson)

The 11.PzDiv was also part of the force fighting at Voronezh. On 5 August, *Generalleutnant* Hermann Balck, commander of 11.PzDiv, submitted an after action report in which he offers his thoughts on the future for German tank units.

> After action report of the fighting northwest of Voronezh from 28 June to 18 July 1942:
>
> A. Organizational issues:
>
> 1.) Panzer.
>
> The medium tank dominates the battlefield [German: PzKpfw III and IV, Russian: T-34, KV-1 also the British Mk II Matilda]. All light tanks [German: PzKpfw II, Russian: T-60 and T-70] have disappeared from the battlefield, even as a reconnaissance vehicle, since they cannot fight against a

> medium tank. All reconnaissance will be performed by medium tanks only. The PzKpfw II is only to be used to guard supply columns and to tow supply trucks through muddy road sections.
>
> Conclusion.
> Production and development of light tanks [Leopard] should be cancelled in favour of medium types. The light tanks can be removed from all organizational structures. The *Panzerkompanie* can be issued with PzKpfw III (command tank, two escort tanks, three platoons of each five tanks; a total of 18). As for the latest medium tank [Panther], we can already say that is the ideal type and far superior to Russian T-34 and KV tanks.

It is puzzling that Balck omits to mention the long-barreled PzKpfw IV in his report, as it was the most powerful German tank at the time.

His observations concur with many others. The light PzKpfw II was regarded as being too weak with regard to armour and firepower. However, Balck rejects even the proposed successor (Leopard). In the coming years, his ideas were in part accepted by 1943, the reconnaissance platoon of a medium tank company was to be issued with the PzKpfw IV, and later the PzKpfw V Panther.

> Organization.
> The *Abteilung* should not have more than three companies [PzKpfw V Panther], since the necessary supply convoys would become too large. With respect to demands of the *General der Schnellentruppen*, the staff company requires a close-combat platoon equipped with *Zerstörer* [it is assumed that these are radio-controlled demolition carriers. Author] and *Flammenpanzer* [flamethrower tanks]. The engineer platoon (four sections) must have armoured half-track vehicles.
> A *Panzerregiment* with three battalions enables the divisional commander to quickly establish pin-point attacks. A brigade with two regiments each having two battalions is not necessary due to the greater performance of our modern tank [PzKpfw V Panther].
> The PzKpfw VI Tiger, which will soon be superseded by a 100-ton tank, must be available soon for a *Sturmbrigade* [assault brigade] to use on difficult combat missions. These tanks should be issued to independent heavy tank brigades, in order not to impair the great operational mobility of a *Panzerdivision*.

The ideas promoted by the commander of 11.PzDiv anticipated some aspects of the later structure of PzDiv 43. On 20 October 1942, his unit had three Panzer battalions.

However, while the support weapons demanded by him were introduced on a limited scale, a regular Panzer division would have two battalions, each with four companies. The indication to heavy tanks refers to his wish of having armoured 'sledgehammers' available. By the end of 1942, the 56-ton PzKpfw VI Tiger Ausf E had just entered service in very small numbers. Although not having any experience with heavy tanks, the commander demanded an even heavier 100-ton tank.

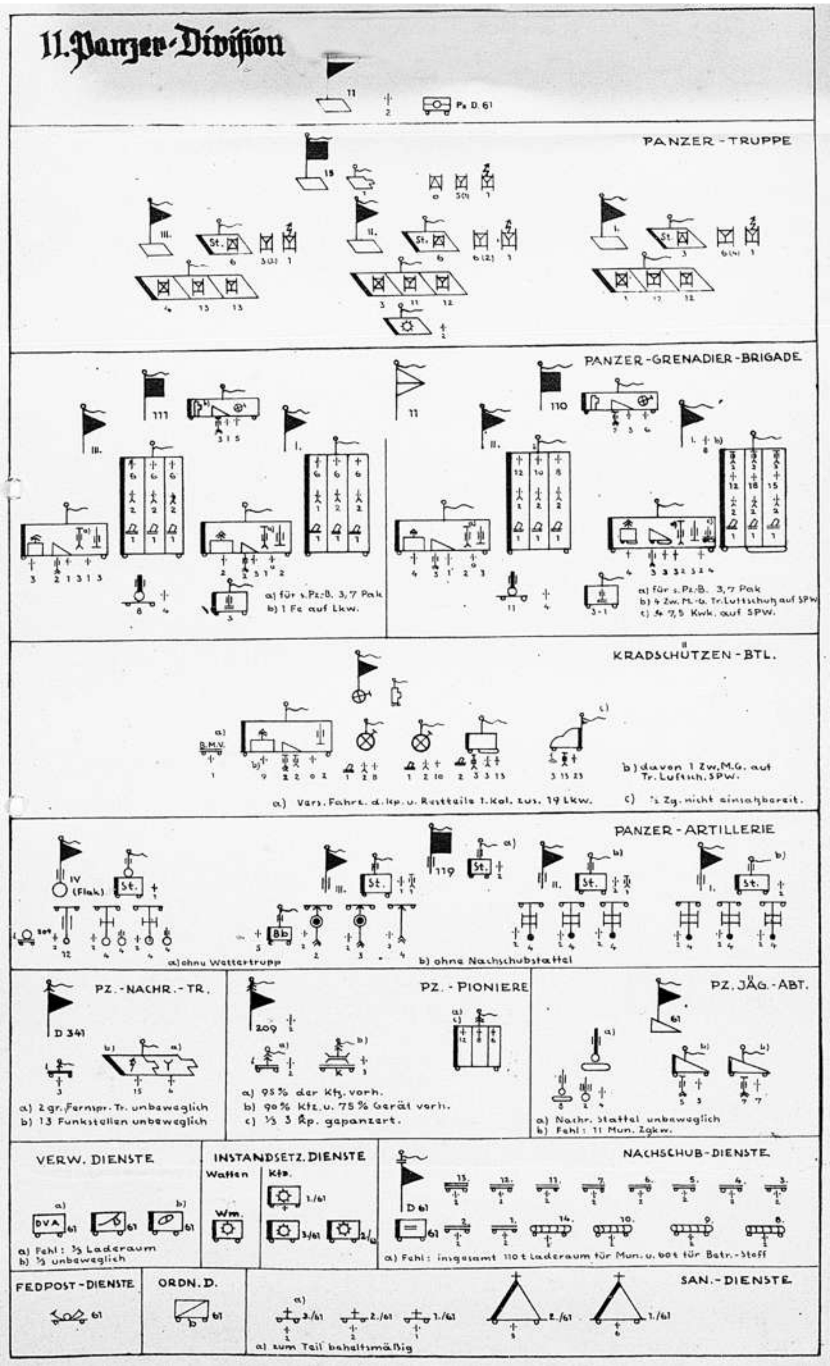
> 2.) *Aufklärung* [reconnaissance].
> The amalgamation of the reconnaissance battalion and motor-cycle battalion has been a complete success… Motorcycles lack cross-country mobility; a *Volkskraftwagen* [VW Typ 181 *Kübelwagen*] company is too large, and requires 20min to prepare to move. The armoured *kradschützen* company proved successful… None of the reconnaissance tanks proved to be reliable; all lacked good cross-country mobility. Leopard and *Luchs* [Lynx] are too expensive.
> Suggestion: Reconnaissance by SdKfz 250 and 251.
> Advantage: The armoured halftracks can be deployed for a variety of roles… The reconnaissance company should be issued with vehicles armed with 7.5cm KwK 37 (kurz) firing high-explosive and hollow-charge rounds, and a number armed with 2cm KwK 38 for engaging both air and ground targets.

Most of the proposals quoted above were realized within the structure of PzDiv 43. Balck also recognized the problems of supply from an overstretched armaments industry, which made him demand the introduction of cost-effective armoured halftracks.

> 3.) *Panzergrenadiere.*
> Up until now the structure has proven effective. The removal of the *Maschinengewehr-Kompanie* [machine-gun company] did not cause any problems. The PzGrenBtl with three *Grenadier-Kompanien* worked effectively. The heavy companies should be equipped with four 12cm heavy grenade launchers, which are better than the 7.5cm *leichte Infanteriegeschütz* [7.5cm light infantry gun]. A *Panzerjäger* platoon equipped with 5 or 7.5cm PaK is essential for the *Panzergrenadiere*.
> All *Panzergrenadiere* should be issued with armoured vehicles, the *Schützenpanzerwagen* [SPW – armoured half-track vehicle – SdKfz 251] armed with the 7.5cm KwK which is better than the 3.7cm PaK.

His demand to equip all four motorized rifle battalions with SdKfz 251/1 armoured personal carriers proved impossible. However, his request was understandable since armoured infantry companies had remarkably less losses of personnel. With the PzDiv 43, the furnishing with infantry guns and anti-tank guns should be improved to an even greater extent.

Organizational Structure: 11.PzDiv, October 1942


11.Panzer-Diviſion
Pz.D. 61
PANZER-TRUPPE
PANZER-GRENADIER-BRIGADE
111
110
a) für s.Pz.B. 3,7 Pak
b) 1 Fe auf Lkw.
a) für s.Pz.B. 3,7 Pak
b) 4 Zw.M.G. Tr.Luftschutz auf SPW
c) 4 7,5 Kwk. auf SPW.
KRADSCHÜTZEN-BTL.
B.M.V.
b) davon 1 Zw.M.G. auf Tr.Luftsch.SPW.
a) Vers.Fahrz. d.Kp. u. Restteile 1.Kol. zus. 19 Lkw.
c) ½ Zg. nicht einsatzbereit.
PANZER-ARTILLERIE
IV (Flak)
St.
119
Bb
a) ohne Wettertrupp
b) ohne Nachschubstaffel
PZ.-NACHR.-TR.
D 341
a) 2 gr.Fernspr.Tr. unbeweglich
b) 13 Funkstellen unbeweglich
PZ.-PIONIERE
209
a) 95% der Kfz. vorh.
b) 90% Kfz. u. 75% Gerät vorh.
c) ⅓ 3 Kp. gepanzert.
PZ.JÄG.-ABT.
61
a) Nachr.Staffel unbeweglich
b) Fehl: 11 Mun.Zgkw.
VERW. DIENSTE
DVA
a) Fehl: ⅓ Laderaum
b) ⅓ unbeweglich
INSTANDSETZ.DIENSTE
Waffen
Kfz.
Wm.
NACHSCHUB-DIENSTE
D 61
a) Fehl: insgesamt 110 t Laderaum für Mun. u. 60 t für Betr.-Stoff
FEDPOST-DIENSTE
ORDN.D.
SAN.-DIENSTE
a) zum Teil behelfsmäßig

4.) *Panzerjägerabteilung.*
The tank destroyer battalion is no longer required after equipping the *Panzerregiment* with the Panther and 7.5cm KwK (lang) [PzKpfw IV].

This proposal was of course not feasible. In a defensive situation or in order to guard the flanks during an assault, tank destroyers were a necessity. During 1942, a growing number of *Selbstfahrlafette* (Sfl - self-propelled (SP) guns) were being issued to the *Panzerjäger* battalions; later they were equipped with *Sturmgeschütz* or *Jagdpanzer*.

C. Further suggestions for improvement.

1.) The benefit of a Stuka attack against Russian tanks does not always warrant the expense. The tanks will move into cover, and then reappear after the attack.
Solution: Drop a large number of small hollow-charge bomblets instead of one large bomb.
2.) The division destroyed 256 tanks, despite being the target of very heavy enemy air raids… Our anti-aircraft guns lack armour-piercing ammunition against heavily armoured [Sturmovik] ground-attack aircraft.
3.) The *Typensalat* [type diversity] of our motor vehicles is intolerable; simplification is necessary. We recommend:
    a) One Panzer
    b) Select one half-tracked [SdKfz 250 or 251} chassis as the basis for a range of combat vehicles from armoured reconnaissance to the personnel carrier and the prime movers for the combat supply column.
    c) One truck. Replace the motorcycle and sidecar by a Volkswagen. One light motorcycle.

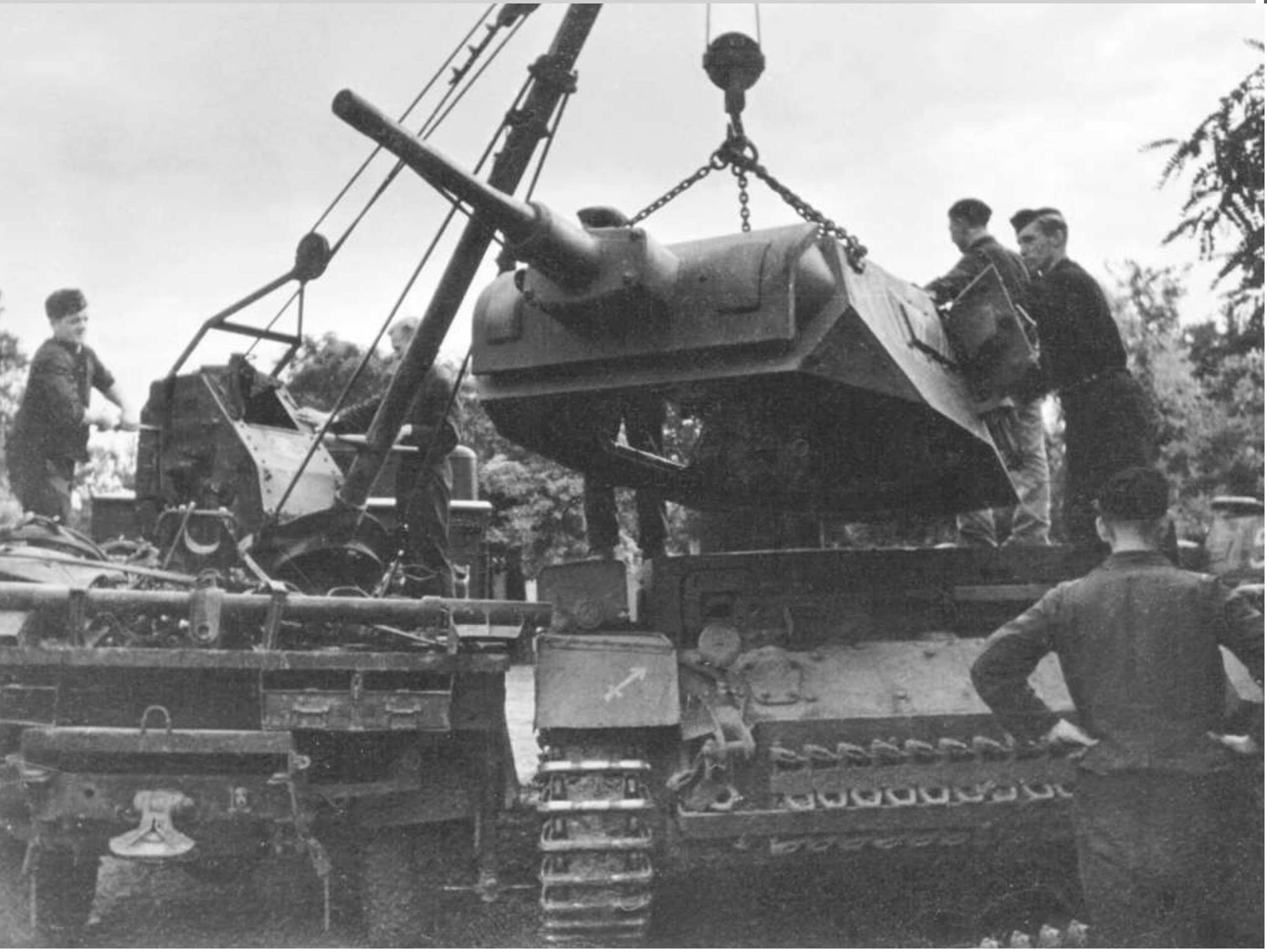
Balck's list ends with further sensible suggestions. The requirement for standardization was long overdue, but was never implemented satisfactorily. However, his suggestion for the usage of hollow-charge bomblets was very foresighted. On 15 October, Balck delivered a further detailed experience report of the fighting around Voronezh.

11.PzDiv Command Post, 15 September 1942:

Experience report of the fighting on the Voronezh and Solnechnyy gradient:

Tactical issues.

1) Attack:
The division's fighting, especially around Voronezh, developed into a long-range tank-versus-tank engagement, favoured by the local "*ideale*



Above:
German workshop echelons relied on a number of specialized vehicles. One of the most important was the *Drehkrankraftwagen* (Kfz 100) crane-mounted truck. The 3-ton capacity crane was essential for lifting a turret or replacing an engine. The vehicle also carried specialized equipment for towing wheeled vehicles. The PzKpfw III Ausf H is from 23.PzDiv. (Hoppe)

Panzergelände" [ideal terrain for tank operations].

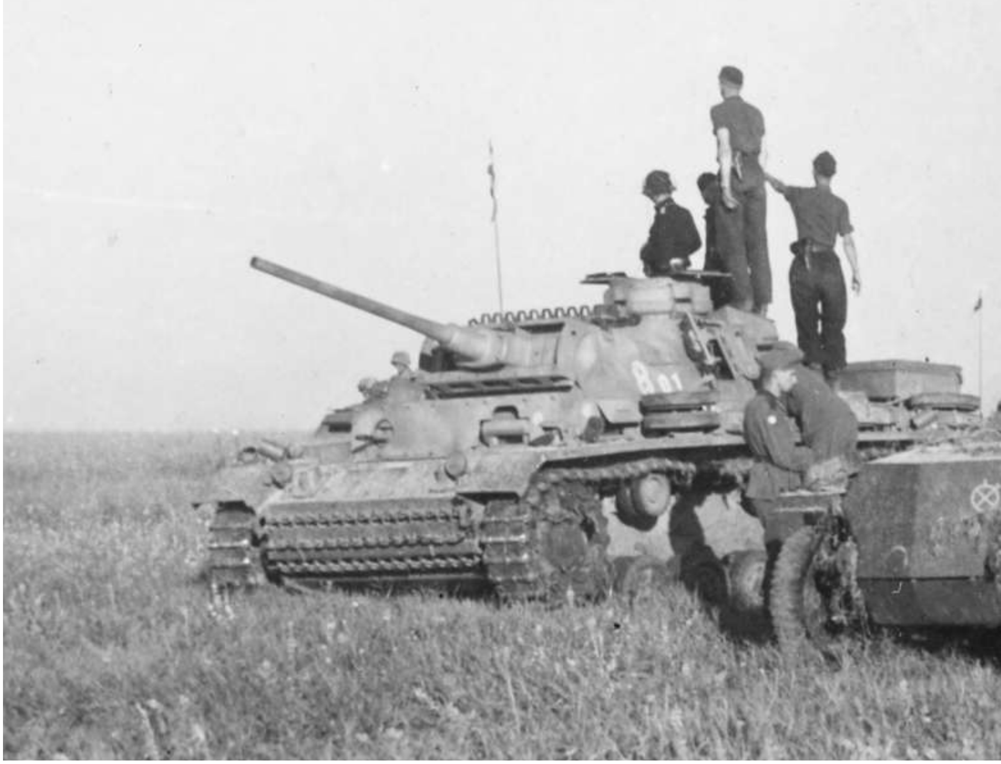
The old principle – tactical and concentrated commitment of the *Panzerregimenter* with at least two battalions, breaking through enemy lines regardless of threats from the flank, if possible in close cooperation with other forces – proved to be most effective again.

If the attack becomes fragmented, or if the tanks become seperated, our losses will be significantly higher, the success much lower.

Panzergrenadiere [armoured infantry] and *Pioniere* [sappers] have to work together. By following close to the tank attack their losses will be small.

In open terrain the Russian (tank and anti-tank) gun is superior to our tanks due to its longer range. Long-term positioning and opening fire too early will be disadvantageous to us. Success can be obtained by a quick and deliberate attack. If the attack fails, then retreat under the cover of smoke. The order for the smoke screen must be given by the company leader.

A frontal attack against well-concealed Russian tanks or anti-tank gun positions is not feasible, and will result in heavy losses. A proven method



Right:
Like many others, the commander of 8.Kp/PzRgt 4 (13.PzDiv) relied on the *Kradschützen* (motorcycle) reconnaissance battalion attached to the division for information. Although originally motorcycle mounted they were equipped with SdKfz 250 halftracks as the war progressed. Note this PzKpfw III Ausf L has S-mine launchers mounted on the track guards. (Anderson)

of attack, which was initially performed by the Russians, is to feign a frontal advance followed by a rapid retreat to prepared positions. This procedure will encourage the enemy tanks into a pursuit. Then, if the terrain allows, the enemy must be destroyed by a simultaneous concentrated attack. The flanks and rear of our force has to be guarded.

The few and precious PzKpf IV (lang) have to be used responsibly under the command of the battalion leader, and only after the tactical situation has become clear, at the focal point of the main attack.

The Russian has tried repeatedly to copy the German-style massed tank attack by deploying up to 60 tanks. However, they never manage to coordinate the tanks, and appear to lack determined leadership.

2) Defence:

On both sides, the tank has turned out to be a defensive weapon which is difficult to defeat. During the Voronezh commitment the division moved onto the defensive by positioning the *Panzergrenadiere* at several strongpoints, backed by the entire *Panzerregiment*. This method proved to be effective. A counterattack followed which cleared the frontline.

In the commitment on the Solnechnyy gradient, the division was forced onto the defensive, resulting in a high loss of personnel. The flanks had to be guarded by tanks, in almost company strength. The remaining parts of the *Panzerregiment* were held back for counterattacks.

Due to the difficult terrain and very heavy enemy anti-tank defence, our exhausted forces were not able to perform their role.

The artillery provided accurate support fire for the motorized infantry, their well-placed and concentrated bombardment proved to be effective in repulsing most enemy attacks.

In open hilly terrain, the Russians succeeded in positioning their tanks most effectively, and used their long-range guns to great effect. Dug-in tanks proved to be the most difficult to defeat.

General issues:

3) Weaponry:

Panzervernichtungstruppen [tank destruction squads] have proved to be outstandingly effective. A steadily growing number of tanks were destroyed in obstructed terrain by squads using *Hafthohlladungen* [hollow charges] and *Nebelhandgranaten* [smoke grenades].

A direct comparison between 5cm PaK and PzKpfw III KwK (lang) is most interesting. The tanks have suffered very few losses while achieving a high-kill ratio. The anti-tank gun losses, including crews were much higher; approximately 50 percent, at a low-kill ratio. Each anti-tank gun team was able to fire three to five rounds, and then inevitably knocked-out by an enemy tank attack.

> Conclusion:
> The PaK is out dated and has to be replaced by Panzer or *Sturmgeschütz*. A good *Panzerjäger* [tank destroyer] is defined by having all-round armour protection and excellent mobility. The *Sturmgeschütz* has to be issued to the infantry, the *Panzergrenadiere* have to be issued with tanks, at a rate of one company per regiment, to replace the PaK anti-tank gun.
> Even a 3.7cm PaK on the SdKfz 251/10 proved to be effective as a tank destroyer. The vehicle is easily readied for action and highly mobile which make up for weak armoured protection. We suggest the substitution of the 3.7cm with the 7.5cm StuK 37 L/24 (kurz).
> The 8.8cm *Flugzeugabwehrkanone* [FlaK] must not be placed in the frontline as an anti-tank gun. It is far too bulky in open positions and will be knocked-out immediately. It can be used in a well-camouflaged position to block any break through by enemy tanks.
>
> Tanks:
> The medium tank rules the battlefield… PzKpfw III and IV are equal to the Russian tanks (except range), but have better observation means and well-trained crews.

This comprehensive report applauds the quality and effectiveness of German tactics and commitment; only their tanks were decisive in large tank-versus-tank engagements. The reasons were partly explained by the commander of 11.PzDiv, and reflect comments made in many other reports.

On 5 September, PzRgt 15 reported the destruction of their 700th Russian tank since the beginning of the Russian campaign. A strength report, dated 11 September 1942, showed that PzRgt 15 had only nine operational PzKpfw IV (lang), the only tank that could defeat the masses of Soviet T-34 and KV tanks.

The unit received orders to hold the present frontline as their *Winterstellung*, (winter position). Defensive trenches and gun emplacements were dug, before PzRgt 15 was reinforced by StuGAbt 600. At the same time, 11.PzDiv declared that it was not sufficiently prepared for a second winter in the east.

Panzerlage 11.PzDiv	11 September 1942
PzBefWg	2
PzKpfw II	14
PzKpfw III (k)	7
PzKpfw III (l)	62
PzKpfw IV (l)	9
Sturmgeschütz (kurz) (StuG Abt 600)	12

After Voronezh was captured, and contrary to previous orders 11.PzDiv was transferred to *Heeresgruppe Mitte* (Army Group Centre) at Belgorod.

List of tanks at the beginning of the summer offensive June 1942 - HG *Süd*, A and B

	PzKpfw II	PzKpfw 38(t)	PzKpfw III (kurz)	PzKpfw III (lang)	PzKpfw IV (kurz)	PzKpfw IV (lang)	PzBefWg	Total
3.PzDiv	25		66	40	21	12		**164**
13.PzDiv	15		41	30	12		5	**103**
14.PzDiv	14		41	19	20	4	4	**102**
16.PzDiv	13		39	18	15	12	3	**100**
22.PzDiv	28	114		12	11		11	**176**
PzAbt 204, part of 22.PzDiv	11	26		1	4	4		**46**
23.PzDiv	27		50	34	17	10		**138**
24.PzDiv	32		54	56	20	12	7	**181**
SS-Div Wiking	12		12	24	4		1	**53**
PzAbt 103, 3.InfDiv	10			35		8	1	**54**
PzAbt 116, 16.InfDiv	10			35		8	1	**54**
PzAbt 129, 29.InfDiv	12			36		8	2	**58**
PzAbt 160, 60.InfDiv	17			35		4	1	**57**
Total	**226**	**140**	**303**	**375**	**124**	**82**	**36**	**1,286**

Elements of *Heeresgruppe* B now turned south following the river Don, and within a short time it had made significant territorial gains; the next target was Stalingrad. At that time, eight tank divisions supported by several tank detachments attached to infantry divisions were involved in the summer offensive.

The 14 and 16.PzDiv were part of the force which was to attack Stalingrad from the west: 24.PzDiv was to advance on the city from the north along the river Don.

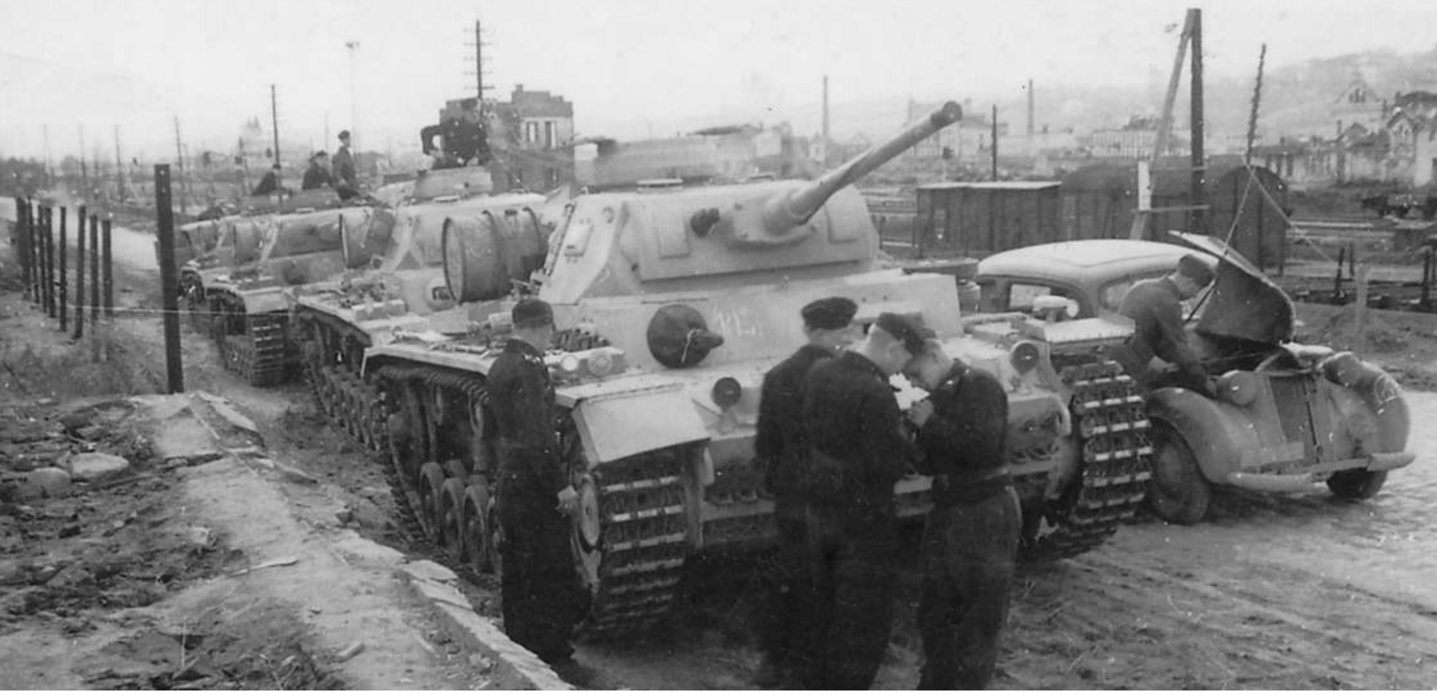
Heeresgruppe A, which contained 3.PzDiv, 13.PzDiv, 22.PzDiv and 23.PzDiv and SS-Div Wiking, headed south to the Caucasus Mountains.

For *Heeresgruppe* A, their summer offensive proved to be successful. Rostov was taken at the end of July, and 1.*Panzerarmee* then advanced deep into the south and reached their objective; Maikop on the river Terek.

In November, the city of Stalingrad was surrounded and 6.Army held positions on the western bank of the river Volga, the Soviet defenders had retreated and now held a few remaining pockets of resistance.

Supply – Ignoring reality

Beside the heroic and finally successful resistance by the Soviet defenders, the fighting was influenced by other factors, mainly the lack of transport to bring supplies to the front-line positions. For Germany, a regular supply of oil continued to be problem. Thus the wish to defeat an enemy before the oil reserves were exhausted could possibly be the explanation for the *Blitzkrieg* strategy.



Above:
Although these PzKpfw III Ausf J or L were delivered to 5.SS-PzDiv Wiking in early 1942, they are painted in two-tone (sand yellow and grey-brown) tropical camouflage. It was typical of the unit to mount a 200-litre fuel drum on the rear of its tanks – a great aid to identification. (Anderson)

Some historians believe that the shortage of oil was one of the reasons that encouraged Hitler to attack the Soviet Union. However, it is not within the scope of this book to discuss the matter in detail, other than the need for oil did influence and motivate German actions.

By the 1940s, the Soviet Union was among the largest oil producers in the world. Germany imported most of its oil from Ploesti, Romanian. Stalin had expressed a desire to seize parts of Romania and this represented a danger to the critical supply lines for Germany (part of the Molotov-Ribbentrop Pact). Before ordering the invasion, Hitler had already planned the capture of Moscow, the Donets industrial region and the oil fields in the Caucasus. However, the *Blitzkrieg* strategy failed for the first time during the attack on Moscow.

When the summer offensive began, Hitler and his cohorts placed all their hopes on a rapid advance to occupy the Caucasus. The region supplied much of the crude oil to fuel the entire Soviet Union; a German victory would cut off the supply, a fortunate side-effect.

However, the planned offensive would consume large amounts of the Germany's already meagre oil reserves. Again, for *Fall Blau* to be a rapid success *Blitzkrieg* tactics had to work.

While *Heeresgruppe* B was assigned to protect the flank by crossing the river Don and taking Stalingrad, *Heeresgruppe* A had captured Maikop in autumn 1942, and by the beginning of December oil was flowing to Germany. However, neither Grozny nor Baku had been reached.

Heeresgruppe A had to release troops because of the critical situation at Stalingrad, and this made any further advance impossible. The counter offensive launched by the Soviets could not be halted: German forces retreated from Maikop in early 1943.

Hitler was quoted as saying: 'If I do not get the oil of Maikop and Grozny, I will have to end the war.'

A further problem was caused by the long distances over which supply convoys had to travel. This created a serious shortage of food, ammunition and, most importantly, spare parts to keep the tanks operational: Disaster loomed on the southern front.

The railway system was overstretched, the lines were open to bombing by Soviet aircraft and there was the growing danger of attacks by Russian partisans. Increasing numbers of police troops were deployed to combat this threat.

Throughout the war German supply transport, although motorized, still continued to rely on the horse; some 60 to 70 percent remained horsedrawn in 1942.

In this context it is surprising how far and how fast German forces could advance.

Götterdämmerung (Twilight of the gods)

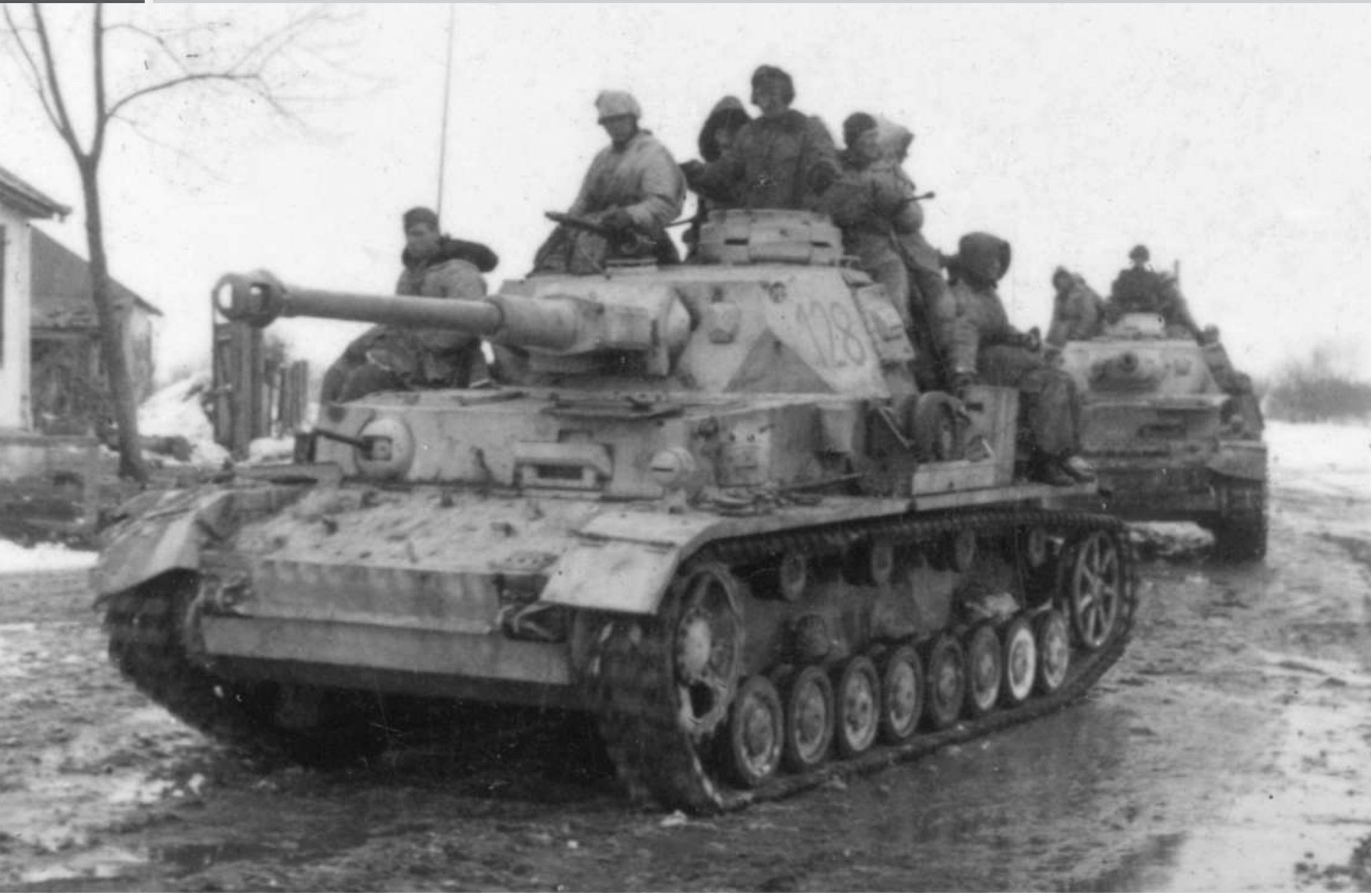
By November 1942, German units, after experiencing little resistance, had managed to push the defenders back to the river Volga. Here Soviet forces put up a fierce resistance and decisively delayed the German army.

The fighting for Stalingrad would be street by street and house by house; known today as urban warfare. Raids by the *Luftwaffe* had reduced much of the city to rubble, which provided many hiding places for the defenders. The Soviets also began using a new, very effective tactic; surprise pin-point attacks by 'shock troops' which weakened the German forces. Soviet reinforcements and supplies came via the river Volga.

The centre of the city was so badly damaged that German forces could not use tanks and assault guns. Attacks by snipers and anti-tank rifle troops concealed in the rubble were a constant danger; even armoured vehicles had to be used only in support of the infantry. The fighting was fierce and difficult for both sides, also the situation was aggravated by weather conditions. Once again German troops had not been equipped with adequate winter clothing.

As the fighting continued, both sides destroyed many built up areas. The Soviets tended to tunnel under large houses and lay explosives ready for demolition if German troops entered or came close. They would then launch an attack over the rubble.

As a result of this new type of warfare, the Germans forced to develop a specialized weapon to destroy buildings. The resulting *Sturmpanzer* was a (possibly logical) highly-specialized development of the proven *Sturmgeschütz*. A 15cm *Sturminfanteriegeschütz* (sIG) 33 infantry gun was mounted on the chassis of a *Sturmgeschütz*, a simple armoured superstructure was fabricated to



Above:
Two PzKpfw IV Ausf G from 1.SS-PzDiv Liebstandarte Adolf Hitler in winter 1942; note the frontal armour has been reinforced with welded-on 30mm armour plate. The long-barreled PzKpfw IV would soon become the mainstay of the *Panzerwaffe*. (NARA)

provide sufficient protection for the crew. A small number of *Sturmpanzer* were completed in a very short time and saw limited action in and around Stalingrad. The concept apparently proved promising and encouraged the development of a new *Sturmpanzer*, armed with a sophisticated 15cm mortar, to be built on a PzKpfw IV chassis. These weapons would be issued to the *Panzertruppe* rather than to the *Sturmartillerie*.

On 19 November, the Soviets launched a surprise counterattack, code named *Operatsiya* Uran (Operation Uranus). Weakened German positions in the north and south of Stalingrad were penetrated; within five days the 6.Army had been surrounded.

On 25 November, *General der Artillerie* von Seydlitz, commander of LI.*Armee Korps*, sent an alarming message to *Generalfeldmarschal*l Friedrich Paulus (6.Army):

> To the honorable commander in chief of 6.Army
> The army has to face the decision to launch a breakthrough heading southwest to Kotelnikovo, or face annihilation within a few days.

General von Seydlitz clearly recognized the absolute hopelessness of the situation as he continued:

> The supply situation was already critical at the beginning of the battle for Stalingrad. Now stocks of ammunition, fuel and rations are near to zero… A full supply by air is not possible. The Russian air force has the ability to stop such a mission. The enemy will certainly strive to annihilate my encircled forces.

As history would show, Hitler refused to allow any attempt to breakout, and later he vetoed any surrender. When finally on 12 December, von Manstein ordered a large-scale relief attack called *Unternehmen Wintergewitter* (Operation Winter Storm), the encircled units were too weak to launch a break-out operation. Indeed most of the remaining Panzer divisions, except 6.PzDiv, had been severely depleted. Tank groups and battle groups with small detachments of tanks, armoured cars and artillery, were not able to withstand the Soviet attacks. On 23 December, all efforts halted – German forces had run out of fuel.

Tank strength for *Heeresgruppe* Don

Panzerlage 4 December 1942	6.PzDiv	*Gruppe* Stumpfeld	336.ID	11.PzDiv	22.PzDiv	23.PzDiv
PzBefWg	5	–	–	3	–	–
PzKpfw II	8	3	–	8	–	11
PzKpfw 38(t)	–	–	–	–	1	–
PzKpfw III (k)	–	1	8	9	1	10
PzKpfw III (l)	67	5	–	43	2	22
PzKpfw III (7.5)	22	–	–	–	–	–
PzKpfw IV (k)	–	2	–	1	–	1
PzKpfw IV (l)	13	3	–	5	–	25

During the encirclement, large numbers of German soldiers died from starvation and the severe cold rather than in combat. The *Panzertruppe* lost three *Panzerdivisions*, the 14.PzDiv, 16.PzDiv and 24.PzDiv.

To avoid a further defeat, *Heeresgruppe* A began a rapid withdrawal from the Caucasus region. The advance to Stalingrad resulted in more than a 1,000,000 Soviet and German casualties. Losses of equipment cannot be exactly verified, both German and Soviet figures reveal astonishing numerical differences. The end of *Fall Blau* was a significant moment in the war; called decisive by some historians. While the final offensive on Moscow had failed it was considered to be only a limited setback. The debacle at Stalingrad showed for the first time that the mighty German army, including the so far victorious *Panzertruppe*, could be stopped.

CHAPTER 3

TIGER & PANTHER: NEW TYPES INTO BATTLE

When large numbers Soviet-built T-34 and KV tanks suddenly appeared on the battlefront in Russia; a wave of apprehension spread through German commanders and down to the front-line troops.

Military planners in the Reich became aware that the *Panzerwaffe* was in desperate need of a new tank to regain superiority on the battlefield. Their first move was to upgrade existing PzKpfw III and IV, and also the *Sturmgeschütz* by mounting a more powerful gun in each type. However, Hitler and the *Heereswaffenamt* (HWA – Army Ordnance Bureau) demanded an urgent response from German tank manufacturers to their request for a new type to be designed.

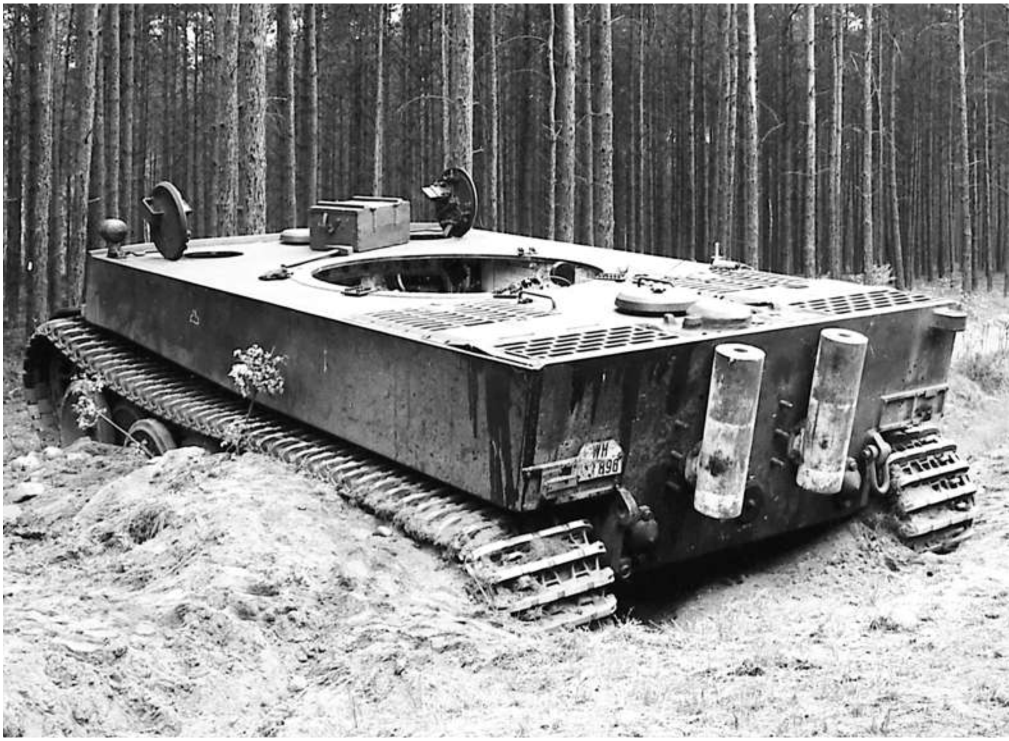
Generaloberst Heinz Guderian wrote in his memoir:

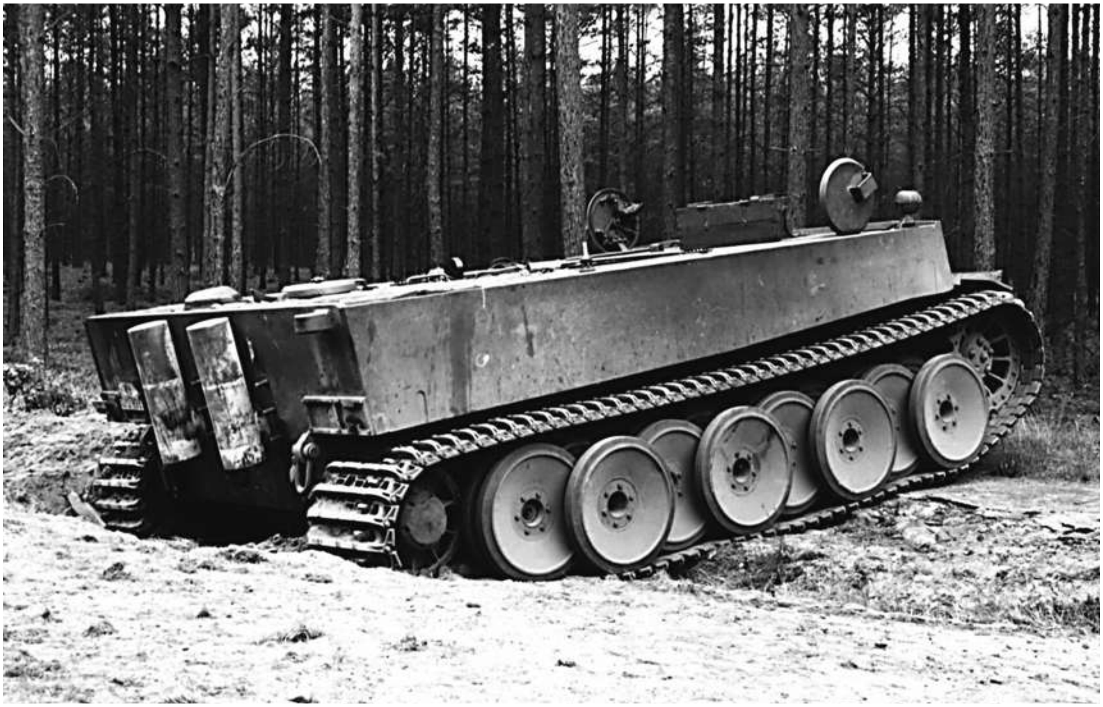
> After taking over the high command over the army in December 1941, Adolf Hitler showed a growing interest in all current weapon development.
>
> As mentioned earlier, specialist engineers, representatives of the manufacturers and officials from the *Heereswaffenamt* visited my army group in November 1941, to discuss the necessary measures required to defeat the superior Russian T-34 tank based on current experience gained on the battlefront. Early thoughts offered by front-line officers to simply replicate the T-34 were rejected by the engineers. Their reason was not due to vanity, but their sheer inability to design, in the short time available, the most essential component; an all-aluminium diesel engine.

Left:
To meet the very tight delivery schedule, employees at the new Nibelungen-Werke facility in St. Valentin, Austria worked around the clock to have the Porsche Typ 101 (VK 45.02[P]) ready to be demonstrated to Adolf Hitler on his birthday; 20 April 1942. (Historyfacts)

Right:
The competing Henschel-team worked under similar pressure, but held a decisive edge as their tank was of a more conventional design. The result was that development of the VK 45.01(H) was far ahead and the first prototype was a being tested at a tank trials site. (BAMA)

Below:
Trials of the VK 45.01(H) did not go without problems. Here a possible problem with the steering mechanism has caused the tank to suddenly turn left off the forest track and become embedded in the bank. (BAMA)





The above explains some of the difficulties the German engineers had to face. While the up-armouring and up-gunning programme for the PzKpfw III, and more importantly, the PzKpfw IV and also the *Sturmgeschütz* could be achieved quite quickly, the design and development of entirely new tanks, proved to be much more difficult.

Requirement for a heavy tank

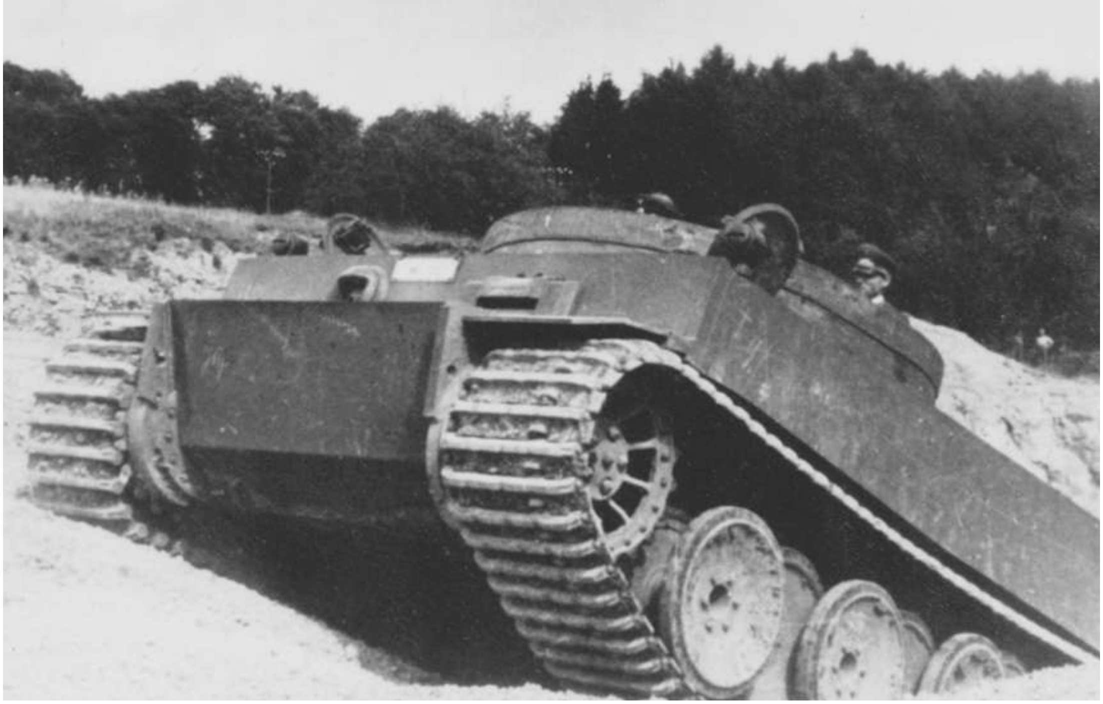
The *Heereswaffenamt* had, before outbreak of the war, already initiated the design and development of new types to replace tanks already in service. However, the work was carried out using technical knowledge and tactical planning of the late 1930s.

During the concept phase, the tank manufacturers, Henschel, Daimler-Benz and MAN were contracted to produce designs. A short time later, Ferdinand Porsche produced his proposal for the new tank.

Henschel began work on their design, which was classed at that time a heavy tank. (Note, with regard to German tank development, the significance of the term *schwer* (heavy) would change over the years. By 1939 standards, a tank in the 30-ton class would certainly fit into this classification.)

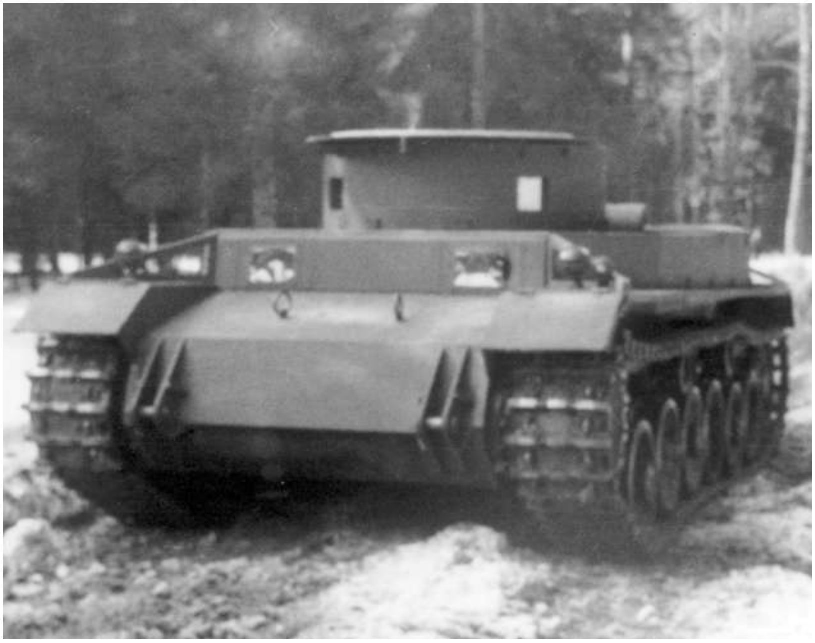
The tactical idea was to break through an enemy's fortified positions. The new class of tank was known as *Durchbruchswagen* (Breakthrough

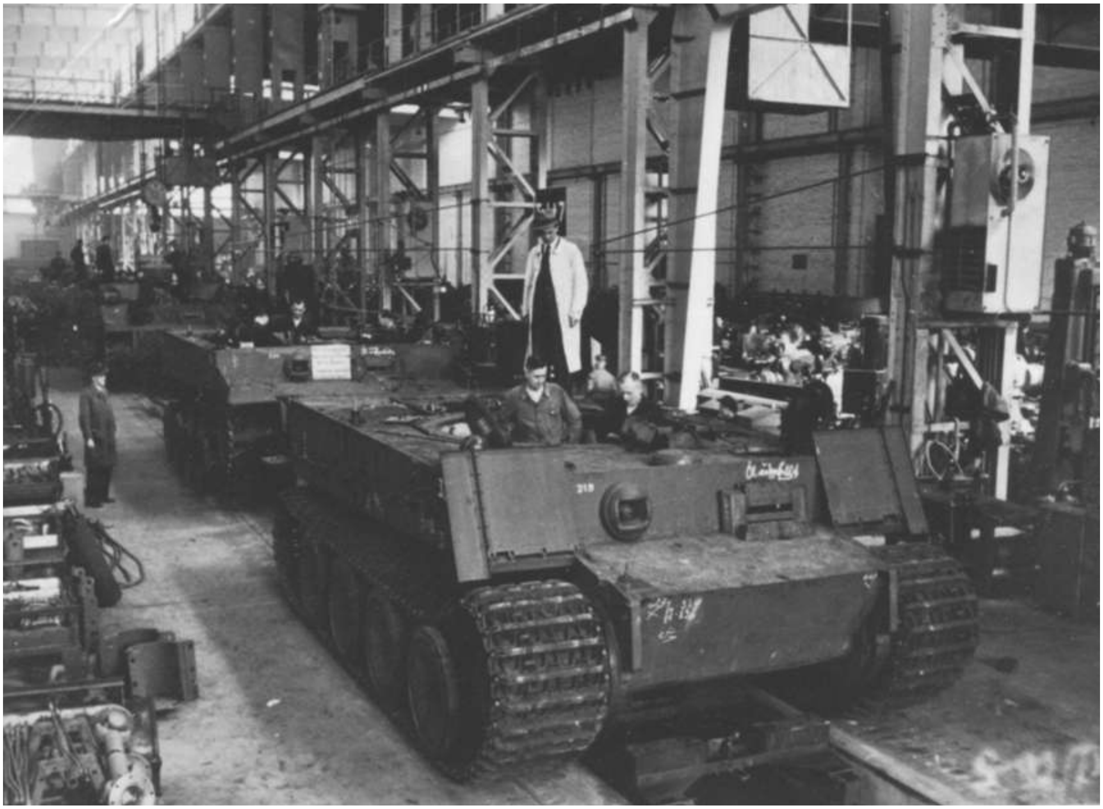
Below:
The VK 45.01(H) on trials; during the test phase, slave weights were mounted on the hull of what was to become the Tiger Ausf E. Despite being very heavy, the tank was fitted with a sophisticated transmission system which allowed high mobility on firm ground. (Historyfacts)



Right:
The Porsche *Typ* 100 was that company's first attempt (Gerät 45.01[P]) to meet the specification for the new heavy tank. The return-roller suspension appears to be very advanced, but was scrapped by the Porsche design team. (Historyfacts)

Below:
An early Tiger Ausf E on the production line at the Henschel plant, Kassel. It is possibly a trials vehicle as it is fitted with wide tracks; normally it would have the *Transportketten* (transport tracks) for transport by rail. (Historyfacts)



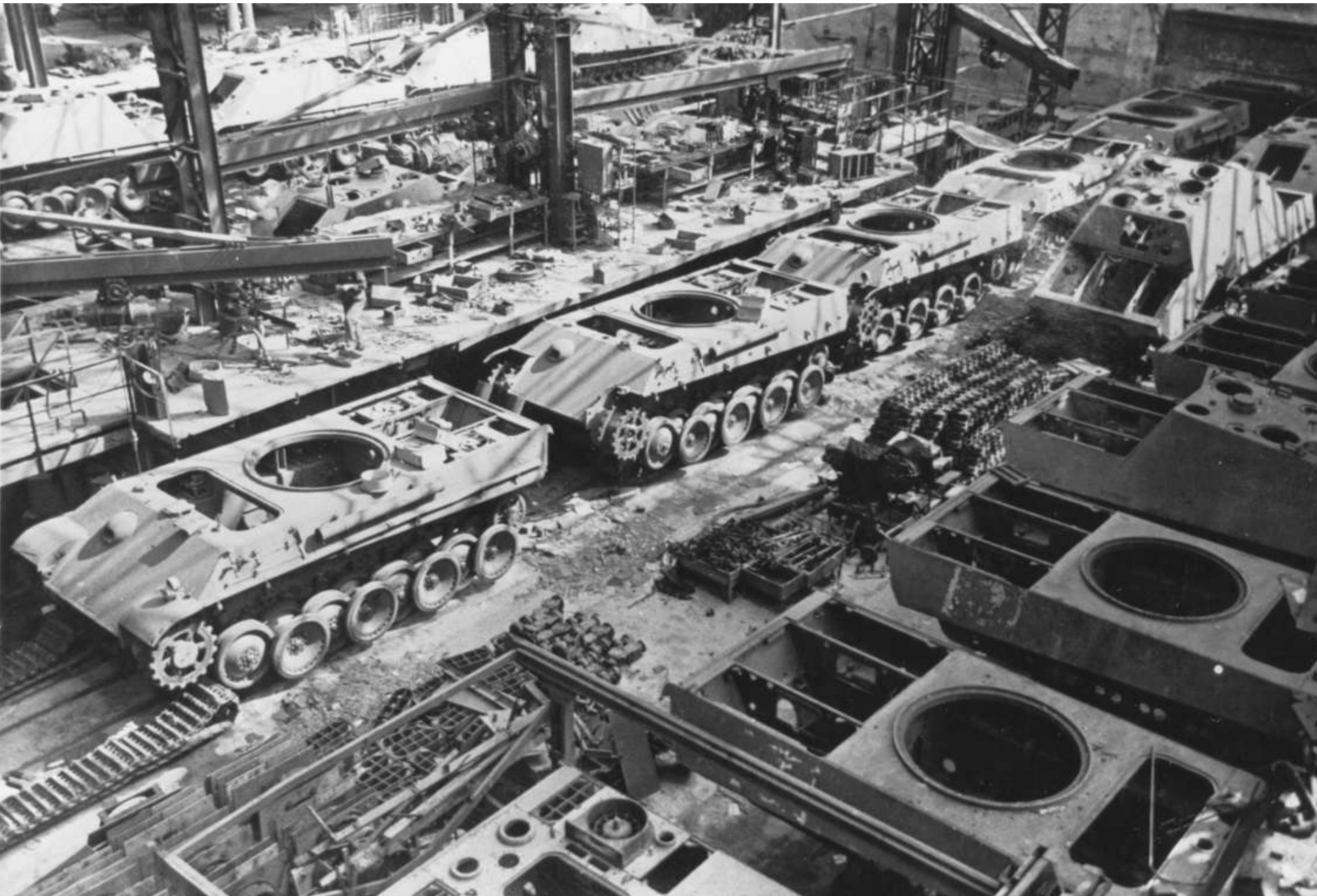


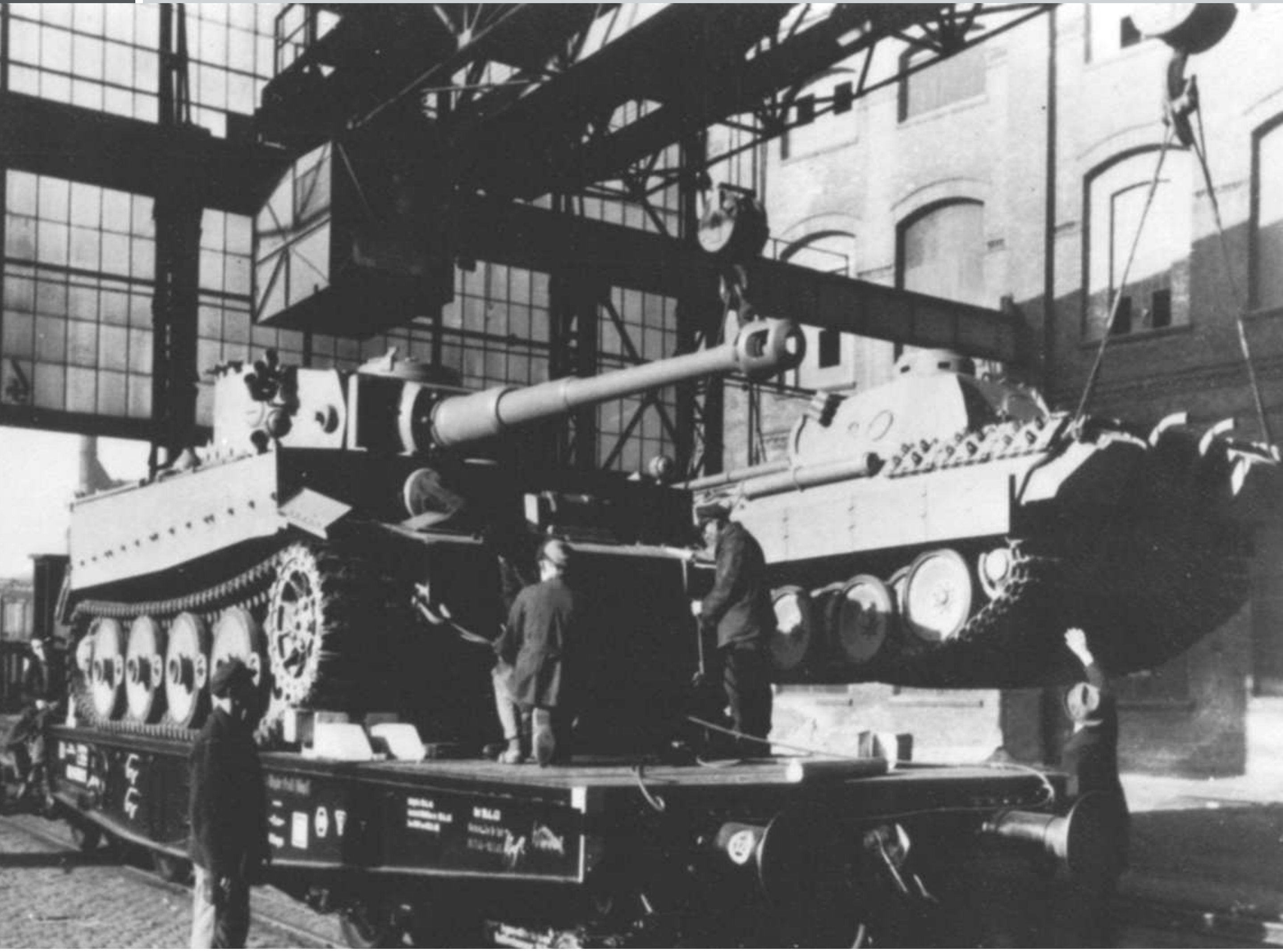
tanks) DW 1 and DW 2, and were built with frontal armour of 50mm, a considerable thickness at that time. Both types mounted the 7.5cm KwK L/24, the same gun as that mounted in the PzKpfw IV *Ausführung* (Ausf – Model) A which was used successfully during early campaigns.

Apparently both prototypes did not meet expectations, so it was decided to develop a new type. Henschel began development of the vehicle, now designated using a more exact German classification system *Vollkettenkraftfahrzeug* (VK – fully-tracked vehicle) 30.01(H). The type was fitted with inter-leaved suspension; typical of German tank design of that time, and the main armament selected was again the 7.5cm KwK L/24. Four prototypes had been completed by 1941 and the Henschel DW 1 and 2, and also the VK 30.01(H) were referred to as PzKpfw VI.

In 1939, Henschel was contracted to design another heavy tank, which was to be developed under the designation VK 65.01, or PzKpfw VII. The proposed weight of the vehicle was 65 tons and was to have frontal armour of 80mm thick. It was to be fitted with the same turret as that originally developed for the VK 30.01, but mounting a 10.5cm gun. As detailed in *Entwicklungsblatt* (development sheet) D 42, one test vehicle (without a turret) had been completed by mid-1941.

Below:
The heavily-damaged assembly hall at the MNH factory in Hannover; the Allied bombing campaign against the armaments industry severely affected the production. In the foreground, are part-finished PzKpfw V Panther Ausf G and a number of *Jagdpanther* hull/superstructures, in the background is a line of partly-assembled *Jagdpanther* tank destroyers. (Panzerfoto)





Above:
Henschel manufactured the PzKpfw VI Tiger in tandem with the PzKpfw V Panther. On completion they would be fitted with *Transportketten* (transport tracks) and loaded on SSyms platform wagons. The Tiger is fitted with *Nebeltöpfe* (smoke candle dischargers) which suggests that it was ready for delivery in early summer 1943. (Historyfacts)

In 1939, Ferdinand Porsche, the newly appointed head of the *Panzerkommission*, was also given a contract to participate in the competition for the new heavy tank. The first prototype of this vehicle called Porsche *Typ* (Type) 100, or VK 30.01(P) had been completed by October 1941 but lacked a turret.

As a result of a meeting between Hitler, the *Heereswaffenamt* and representatives of the tank manufacturers in May 1941, the *Panzerprogramm* (Tank programme) 41 was launched. A short time before the beginning of *Unternehmen* (Operation) Barbarossa, demands were made as the types progressed through the development stages for an increase to the armour protection and firepower. Frontal armour of 100mm and side armour of 60mm was demanded, and the main gun should capable of penetrating 100mm of armour at range of 1,400m.

Henschel began to work immediately on a new design, the VK 36.01. It was to mount the 0725, 7.5cm taper-bore weapon, which in 1941 was the most powerful gun available. The taper-bore produced a very high-muzzle velocity, which gave an excellent penetration performance, and the gun could be mounted in a relatively small turret. However, ammunition for the 0725 relied on tungsten and this hard metal was available in very limited amounts; to become even more limited as the war progressed. For this reason a new Krupp design was chosen, the 8.8cm KwK L/56, based on the *Flugzeugabwehrkanone* (FlaK) gun. A larger turret was required to house this gun which resulted in the superstructure being made wider. In August 1942, the first production tank was ready, but due to numerous modifications, it now weighed 56 tons, some 20 tons more than the original specification.

Porsche was also forced to redesign the *Typ* 100. The following model, the *Typ* 101 was fitted with a new type of running gear without return rollers. While the Henschel VK 36.01 was powered by a Maybach V-12 petrol engine driving a conventional transmission, Porsche preferred to use electric drive. Electric power was supplied by two generator units each driven by an air-cooled diesel engine. The weapon chosen for the *Typ* 101 was also the 8.8cm KwK L/56 mounted in basically the same turret.

The Porsche VK 45.01(P) suffered numerous problems during the development phase. Cooling for the engines was never solved and the electric-drive system proved to be very unreliable.

Porsche, who was close associate of Hitler, apparently decided to keep these difficulties a secret, and he repeatedly confirmed delivery dates for the first vehicles knowing they could not be met.

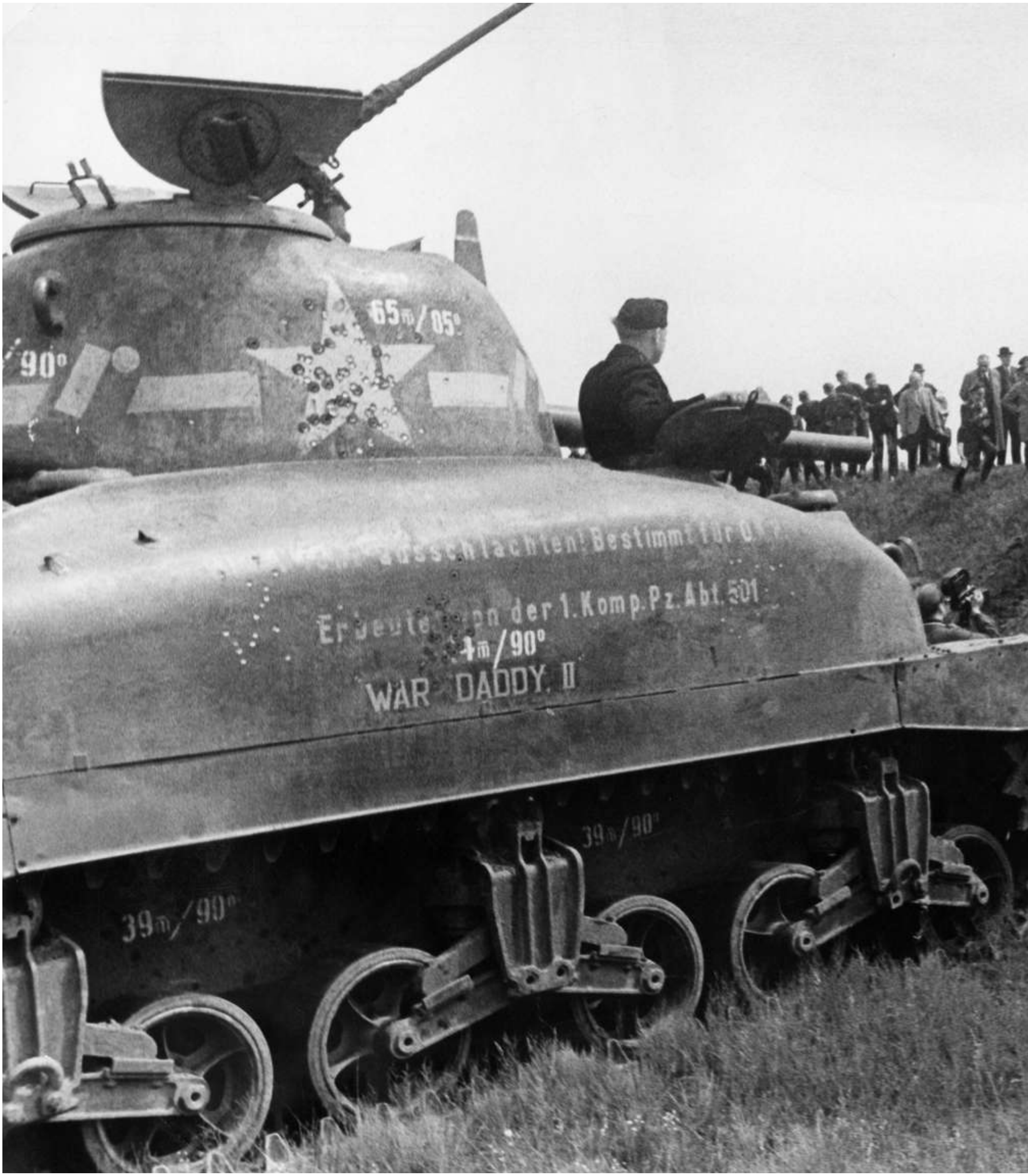
At around this time both vehicles were called the ‘Tiger’.

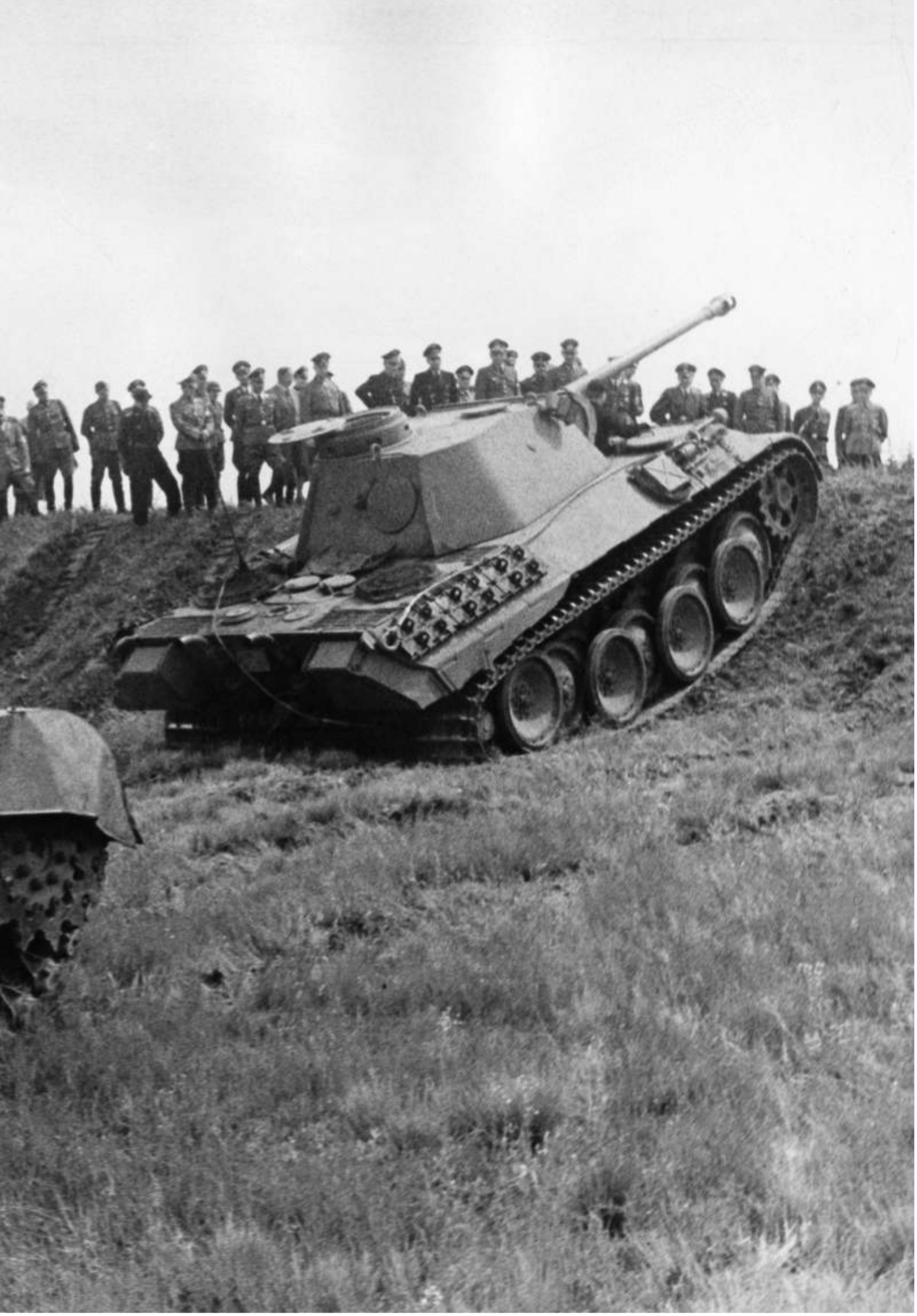
In early 1942, both design teams were working hard on their individual projects, although at the time there was no real competition between Henschel and Porsche. Indeed limited production had already authorized for both heavy tanks. Both companies planned to show their first prototypes at a demonstration of weapons for Adolf Hitler on his birthday; 20 April 1942.

Due to a shortage of time, neither the Henschel nor the Porsche version could be tested thoroughly. However, it soon became apparent that the more conventional VK 36.01(H) was far more reliable than the VK 45.01(P).

Hitler, possibly due to his friendship, showed a certain preference for the Porsche version. During the demonstration the VK 45.01(H) performed far better than the troublesome Porsche vehicle. Several eye witnesses spoke of the agile Henschel tank running rings around the cumbersome and at times immobile Porsche model, but the Führer apparently showed no interest in the superior Henschel tank.

Finally, the *Heereswaffenamt* prevailed after the completion their programme of comprehensive trials, and selected the Henschel design as the new heavy tank, designated PzKpfw VI Tiger Ausf E.

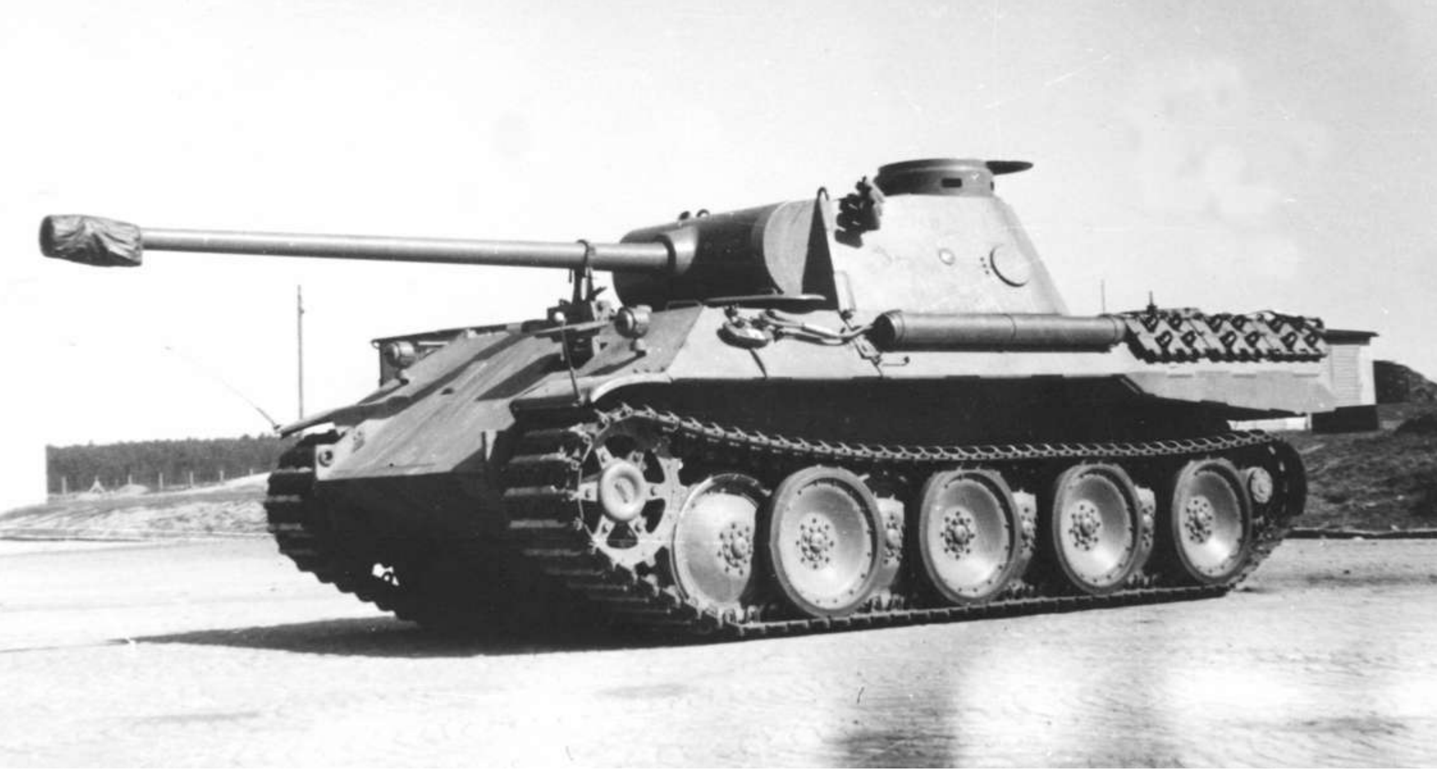

65m/05°
90°
ausschlachten! Bestimmt für O
Erbeutet von der 1. Komp. Pz. Abt. 501
4m/90°
WAR DADDY II
39m/90°
39m/90°



Left:
A PzKpfw V Panther being demonstrated to a number of senior officers. The Sherman M4A1was the most modern US-built tank and 'War Daddy II' had been captured in North Africa by s PzAbt 501; one of the first Tiger units to see action. The conspicuous white star has apparently been used as a target, many 7.92mm armour-piercing rounds have struck and ricocheted off the armour. This propaganda photograph was captioned: 'Where "War Daddy II" fails, our new Panther tank performs with ease and climbs the slope.' (Getty)

Status of development of German medium and heavy tank projects as per 1 July 1942 (source *Entwicklungsblätter*)

	VK 65.01 PzKpfw VII	VK 36.01	VK 45.01 (H) Tiger (H)	VK 45.01 (P) Tiger (P)	VK 30.02 (M) PzKpfw V Panther
Original requirements	Proposal of *Waffenamt* as advancement of the PzKpfw VI with focus on maximum armour.	Armour: 100mm frontal, 60mm sides and rear. Max speed: 40kph. Weapon: 100mm penetration at 1,400m, great explosive impact.	Armour: 100mm frontal, 80/60mm sides and rear. Max speed: 40kph. Weapon: 8.8cm KwK L/56, 100mm penetration at 1,400m, great explosive impact.	Armour: 100mm frontal, 80mm sides, turret 100/80mm. Max speed: 40kph. Weapon: 8.8cm KwK L/56, 100mm penetration at 1,400m.	Armour: 60mm frontal, 40mm sides and rear. Sloped armour. Max speed: 55kph. Weapon: 7.5cm KwK L/70.
Development order	1 September 1939	26 May 1941	26 May 1941	26 May 1941	November 1941
Development ordered by		*Führerforderung*	*Führerforderung*	*Führerforderung*	*Allg Heeresausschuss*, In 6
Developing companies	Henschel: Chassis Krupp: Turret	Henschel: Chassis Krupp: Turret	Henschel: Chassis Krupp: Turret H 1 with 8.8cm L/56 Rheinmetall: Turret H 2 with 7.5cm L/70	Porsche: Chassis Krupp: Turret	MAN Nuremberg
Weight	65 ton	Initially 36-40 ton	56 ton	57 ton	35.8 ton
Armour protection	80mm	Initially 100/60, turret 60/60, later chassis 100/60mm	Front 100, sides 80/60, turret 100/80mm	Front 100, sides 80, turret 100/80mm	Upper front: 80mm at 35° Sides: 40mm at 50°
Engine	HL 224, 600hp	Initially 450hp, later more than 600hp	HL 210 P45, 650hp	Diesel, air cooled, 2 x 310hp	
Max speed	20kph	40kph	40kph	35kph	55kph
Crew	Five	Five	Five	Five	Five
Amarment	7.5cm L/24	Initially *Waffe* 0725, later 8.8cm KwK L/56	8.8cm KwK L/56	8.8cm KwK L/56	7.5cm KwK L/70
Status of production	One vehicle ready by mid-1941	Test series One + six, beginning with April 1942	One vehicle at hand, two in production by August	One protoype ready. Anticipated start of mass production 1942: 6/42: 10, 7/42: 10, 8/42: 12, 9/43: 15 Estimated capacity 15 per month, later 30	Two protoypes ready by July/Aug 1942. Anticipated start of mass production by spring 1943. Monthly production 12/42: 1, 1/43: 6, 2/43: 15, 3/43: 25, later increase to 200 per month
Comments		Only intermediate stage of development, turret developent is dropped, the existing chassis will be converted to recovery vehicles	Series vehicles will be delivered without a previous trial phase	Series vehicles will be delivered without a previous trial phase	



Above:
The PzKpfw V Panther combined high mobility, a powerful gun and almost impenetrable frontal armour which set the new standard for a main battle tank (MBT); just as the Russian-built T-34 had done two years earlier. (Wilhelm)

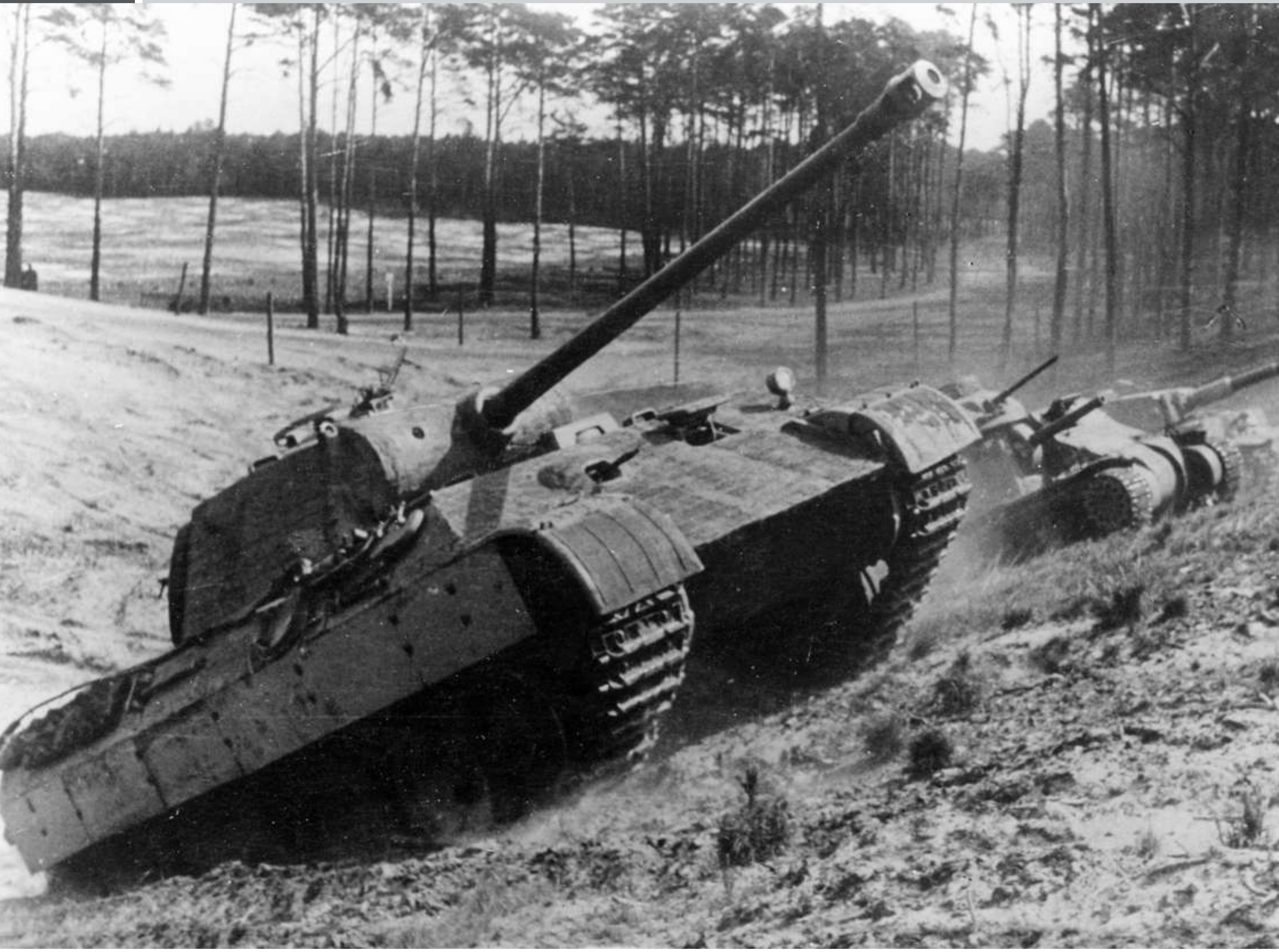
A new medium tank

It was planned for the Tiger to be deployed in relative small numbers against the point of main effort. Ultimately they were used, within clearly-defined limitations, to reinforce conventional field units fighting offensive or defensive operations (however, in reality this was not always possible. Tigers were sent into combat wherever they were available, regardless of any limitations).

It was, however, clear that the *Panzerdivisionen* (tank divisions) needed a different type as a replacement for the obsolete PzKpfw III and IV.

The *Heereswaffenamt* decreed that the new tank should have superiority over every current enemy tank, and also any that may appear in the near future. It also placed special emphasis on high mobility (on both road and battlefield) and, to a lesser degree, on production costs. The aim was to develop a medium tank which could be deployed using speed and firepower to emulate offensive operations of the early *Blitzkrieg*.

Development of the PzKpfw V began immediately after the first T-34 was encountered on the battlefront. It was decided that the answer to the T-34 would be to produce a tank in the 30-ton, and in November 1942 the *Heereswaffenamt* issued their requirements:



Above:
A PzKpfw V Panther medium tank alongside a US-built M3 Lee/Grant medium tank with a PzKpfw VI Tiger Ausf E in the background, climb a steep bank during a demonstration of armour to German officials. (Münch)

Weight:	35 tons
Engine performance:	600 to 700hp
Engine operating range:	minus 40 to plus 42°C
Maximum speed:	55kph
Armour protection:	Front 60mm at 35° slope
	Side 40mm at 50° slope
Ordnance:	7.5cm high-velocity gun

As Henschel and Porsche were already heavily involved in the development of a heavy tank, Daimler Benz (DB) and MAN were contracted to develop their own designs: VK 30.02 (DB) and VK 30.02 (MAN).

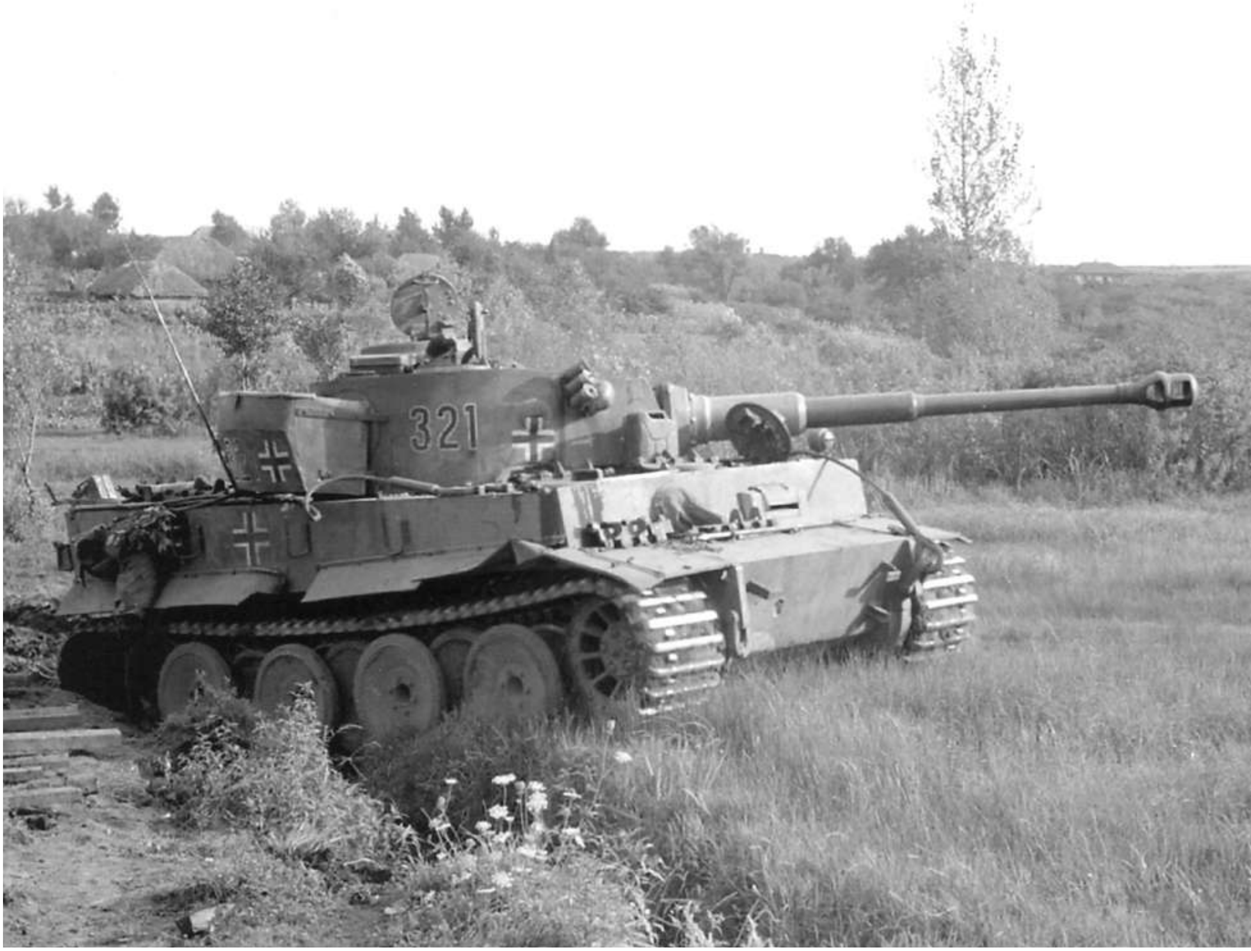
Engineers and designers at Daimler-Benz did seriously considered just copying the T-34 tank, as the type was highly acclaimed by the commanders of many front-line units. Also it was thought that this would take less time.

However, MAN designed a completely new tank, which had sloping armour and also incorporated proven technology from previous tank designs. Unlike the Daimler-Benz proposal, the VK 30.02 (MAN) was to be front driven.

The time factor, along with a number of technical details, was decisive. Daimler-Benz was unable to deliver, and so on May 1942 the order was given for the production of the VK 30.02 (MAN). Daimler-Benz went on to complete two chassis, and all further work was stopped. The company then joined MAN for the series production of the new tank, now designated *Panzerkampfwagen* (PzKpfw) V Panther.

MAN delivered the first prototype in September 1942, and series production began, initially at a very slow pace, in January 1943.

Below:
A camouflaged PzKpfw VI Tiger Ausf E from s PzAbt 503, fitted with a non-standard turret basket which was unique to this unit. (Anderson)



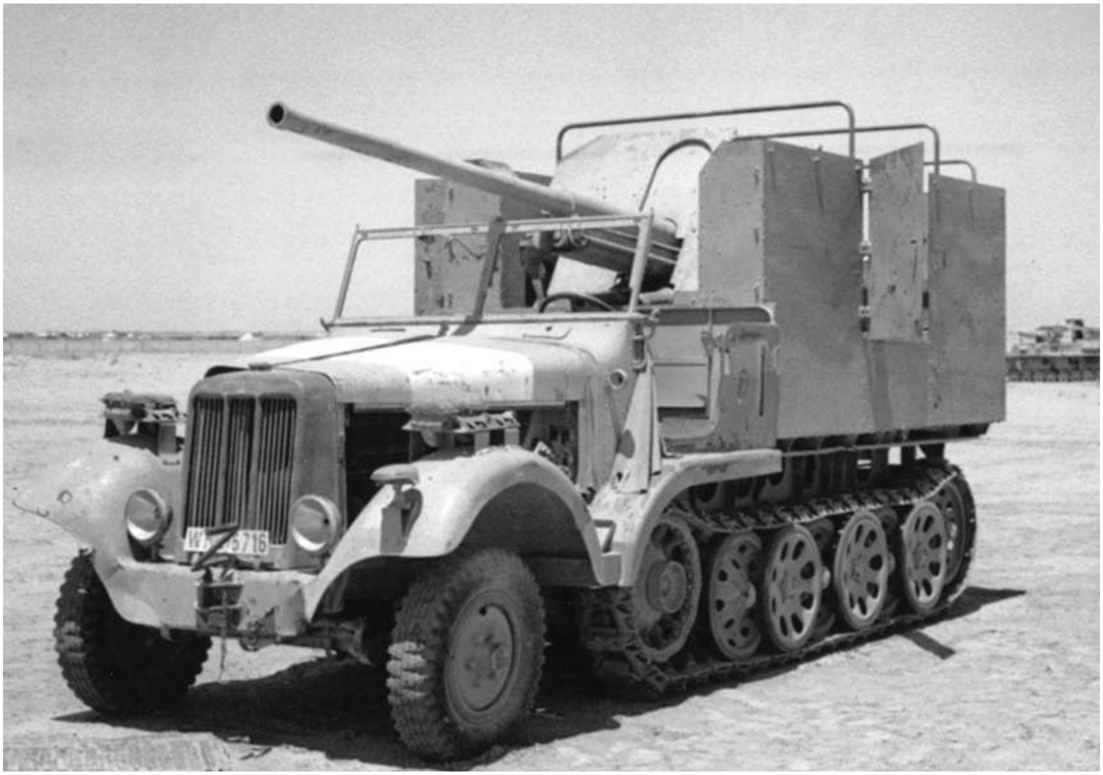
CHAPTER 4

PANZERARMEE AFRIKA: SUCCESS THEN FAILURE

In early 1941, the *Deutsche Afrika Korps* (DAK) launched a successful spring offensive in support of weakened Italian forces after the British had withdrawn some of its forces to Greece. In trying to take advantage of the situation and ignoring clear orders from *Oberkommando der Wehrmacht* (OKW – Supreme Command of the Armed Forces), Rommel continued his advance on the harbour city of Tobruk; an objective of strategic importance. Axis forces began their siege on 10 April. Over the following 241 days, Axis forces launched several attacks to break the defences and enter the city, but these were repelled by dogged resistance from mainly ANZAC troops. On 18 November, the British Eighth Army launched Operation *Crusader* to relieve the trapped forces, which it achieved on 27 November 1941. However during the operation, the 7th Armoured Division ('Desert Rats') was heavily defeated in a tank battle at Sidi Rezegh. The supply situation for the DAK had become critical, and this forced Rommel to withdraw his forces to the Gazala Line, some 50km west of Tobruk.

In September 1941, Axis forces in North Africa had been merged as the *Panzerarmee Afrika*, and was commanded by *Generaloberst* Erwin Rommel. In January 1942, he was awaiting reinforcements for his Panzer force which had been depleted to less than 100 tanks. The situation could not have been better; British air bases on Malta had been temporarily neutralized by continuous bombing operations by the then superior *Luftwaffe*. By taking advantage of such favourable conditions, German forces began to advance further east. However, British forces made a tactical retreat to Tobruk where they constructed fortified gun positions, a defensive trench system and laid deeply staggered minefields. The British were also aware that Axis forces

Left:
All German *Nachrichtenabteilungen* (signals batallions) were issued with specialized vehicles. The *Panzerfunkwagen* (SdKfz 263) was fitted with the same *Funkgerät* (FuG) 12 long-range radio equipment as in the SdKfz 232 (8 rad) armoured car, but as it also had an 8m telescopic aerial the radio range was increased from 30km to over 60km. Even longer ranges were possible due to the favourable conditions found in the deserts of North Africa. (Anderson)



Above: Captured Russian 7.62cm artillery guns were re-chambered to fire PaK40 ammunition then designated 76.2mm *Feldkanone (r)* (FK[r]) and a surprisingly large number were sent to North Africa. The gun, when deployed together with the 8.8cm *Flugzeugabwehrkanone* (FlaK) dominated the battlefield. To provide *Afrika Korps* forces with a mobile tank destroyer, nine 7.62cm FK(r) were mounted (with basic armour protection for the crew) on the chassis of the *mittlere Zugkraftwagen* (m ZgKw) 5t (SdKfz 6/3). (Historyfacts)

would become more vulnerable as they advance further away from their supply bases; another phase in the war of attrition had begun.

20 January 1942	PzKpfw II	PzKpfw III 5cm (kurz)	PzKpfw III 5cm (lang)	PzKpfw IV (kurz)	PzKpfw IV (lang)	PzBefWg
15.PzDiv	12	61		7		1
21.PzDiv	7	16		3		2

On 26 May 1942, after receiving new reinforcements, Rommel launched *Unternehmen* Theseus a surprise offensive aimed at taking Tobruk.

25 May 1942	PzKpfw II	PzKpfw III 5cm (kurz)	PzKpfw III 5cm (lang)	PzKpfw IV (kurz)	PzKpfw IV (lang)	PzBefWg
15.PzDiv	29	131	3	22		4
21.PzDiv	29	107	15	19		4

British forces in North Africa originally had some 850 tanks, but the British had fallen dangerously behind with regard to anti-tank and tank guns. The only anti-tank gun available, the Ordnance QF 2-pounder (QF – Quick Firing) could be described as adequate, but not powerful enough to defeat up-armoured PzKpfw III and IV. Furthermore the gun fired only HVAP rounds, which were not effective against enemy gun positions. When the first *Langrohr*-armed PzKpfw III (5cm KwK 39 L/60) and PzKpfw IV (7.5cm KwK L/48) reached the desert battlefield in May 1942, British tanks became outgunned. However, delivery of the new tanks was slow and erratic with only very small numbers reaching the *Panzerarmee*. Most of the tanks that fought in *Unternehmen* Theseus mounted the short-barreled 5cm KwK L/42 gun.

At around the same time the US-built Medium Tank M3 (Grant in British service), entered the battle and brought with it a decisive increase in firepower. When the British finally introduced the Ordnance QF 6-pounder as an anti-tank gun, they for the first time had a multi-purpose gun capable of firing solid high-velocity, armour-piercing (HVAP) and high-explosive (HE) ammunition.

On 21 June 1942, Tobruk was captured by German forces.

An after action report by the intelligence officer of PzRgt 8 has interesting details:

> Experience report of the fighting in May/June 1942
>
> II. Single weapons:
>
> 1.) Tanks.
>
> Each attack opened with heavy artillery barrage. If the enemy artillery is not sufficient, the 75mm of the "Pilot" tank [the Germans wrongly adopted

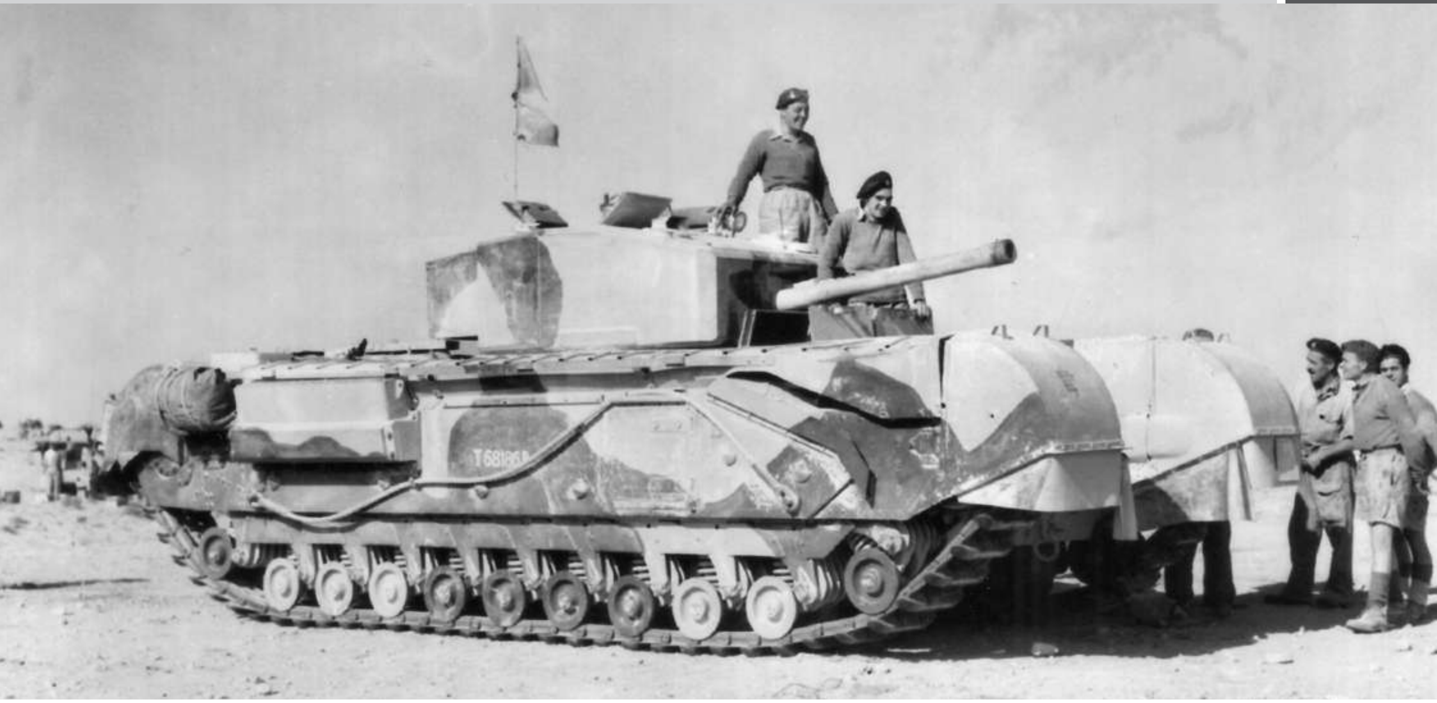
Below:
In March 1942, the first PzKpfw III Ausf J *Langrohr* (lang) reached the desert battlefront. German tank crews were hopeful that it would give them more than a short-term superiority over British armour. (Historyfacts)

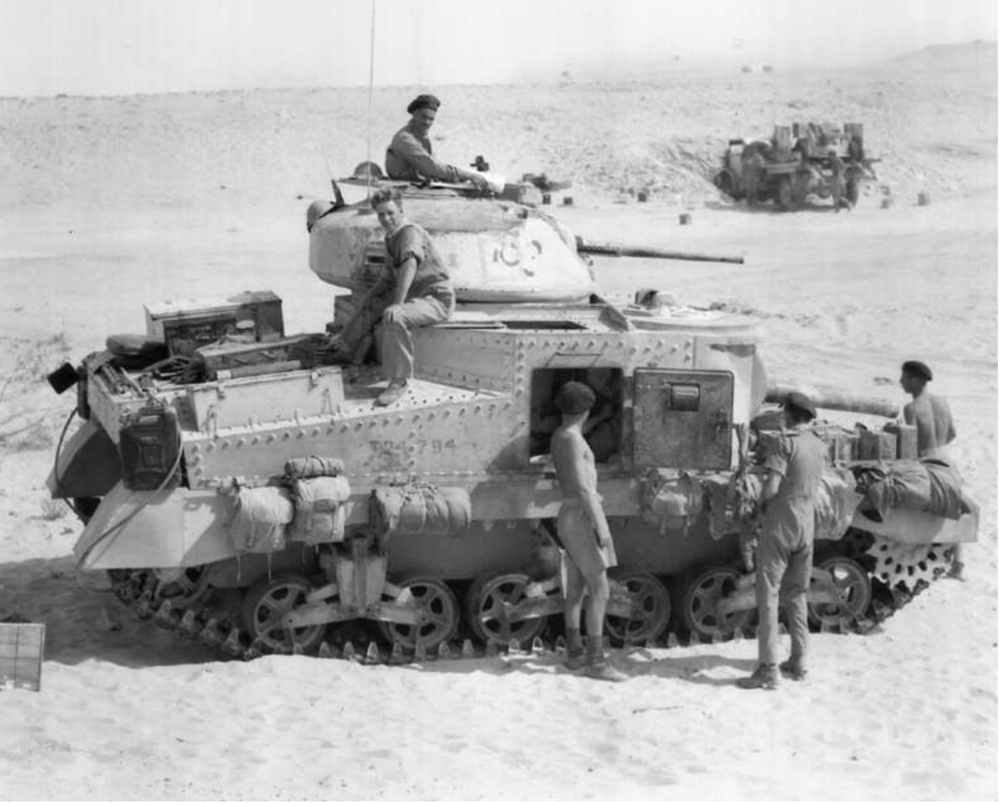
Above:
German forces captured three Armoured Command Vehicles – the type was built on the chassis of an AEC Matador four-wheel-drive truck – from the British army in North Africa. Rommel and his staff greatly valued these vehicles, named ‘Max’ and ‘Moritz’, and used them throughout the campaign. (Anderson)

> this designation for the M3 Grant medium tank, author] will be used respectively. We could detect no support by towed enemy anti-tank guns. The flanks were guarded by self-propelled guns.
> The German PaK is greatly feared, as are the 8.8cm FlaK and the Panzer IV… the enemy begins to open fire from far too long range; possibly fire from the 7.5cm guns of the new American “Pilot”.
>
> 4.) Anti-tank defence.
> The new British 5.7cm anti-tank gun [QF 6 pounder] and the 75mm gun of the “Pilot” are superior to the German 5cm PaK with regard to combat range. This has resulted in many losses among the PaK-equipped tank destroyer companies, although so far only *Vollgeschosse* (solid rounds) have been used.

In the same file a report from FlaK-Rgt 135 explains the commitment of the 8.8cm FlaK:

> Experience report of commitment and combat of the Flak
>
> A) Commitment of heavy FlaK
> a) *Panzerbegleitbatterien* (tank escort batteries): Commitment as before, fire against “Pilot” has to be opened much earlier, at ranges of 3,000m. At closer ranges the 7.5cm gun of the “Pilot” will effectively combat the 8.8cm FlaK with HE shells. In many cases the firing position had to be abandoned after





Above:
The Tank, Infantry, Mk III/IV (A22), Churchill, was respected by German forces as 'a tank difficult to combat'. Six were delivered in secret to North Africa under the code name 'King Force' and these provided decisive support for the 7th Motor Brigade in the Second Battle of El Alamein. The combat value of the type was proven and it was decided to form the 25th Army Tank Brigade which was deployed to North Africa in early 1943.

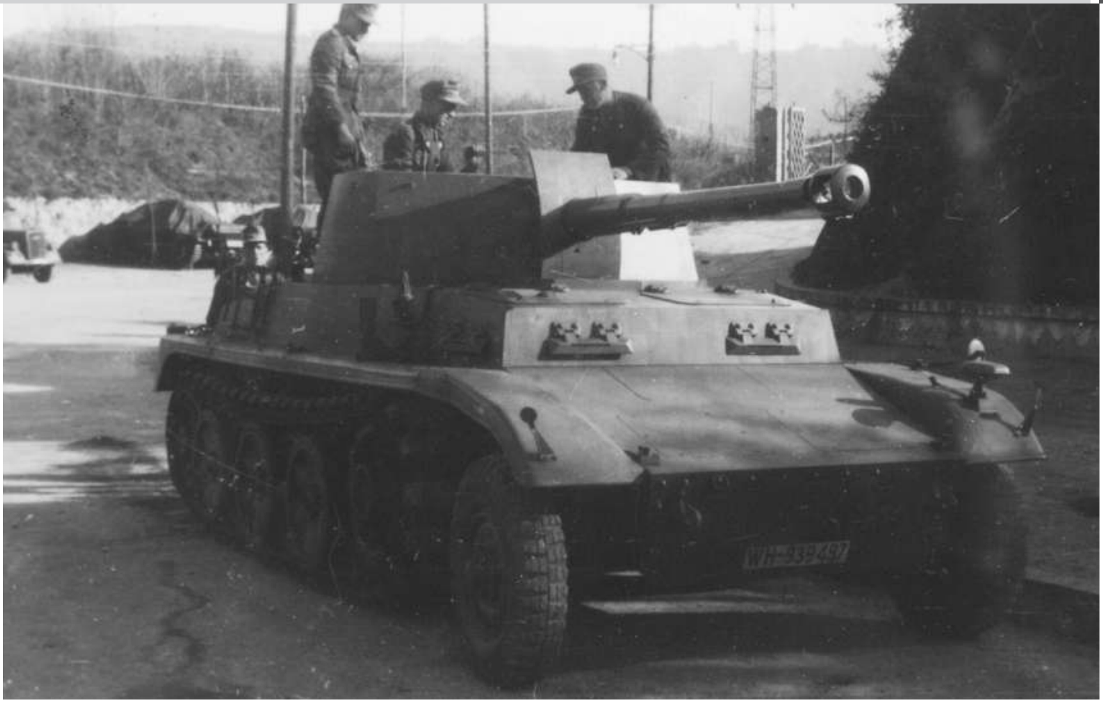
Left:
The M3 Grant was to become a most important tank for the British 7th Armoured Division; the renowned 'Desert Rats', when armed with the 75mm M3 gun. (Anderson)

> only few rounds have been fired, because the enemy located the position and then concentrated all weapons on the 8.8cm FlaK. Moving the gun by a few hundred metres proved to be sufficient. Supporting fire from our own tanks was a great success.

The 8.8cm FlaK was a most effective, and much feared weapon on the North African battlefield. Its accuracy and ability to destroy every British tank is legendary, and it was used by the *Afrika Korps* with great mastery. It is, however, confusing that the British did not find ways to neutralize these clumsy towed weapons, either by the RAF or field artillery. On the other hand, during *Unternehmen* Theseus the Germans held, albeit temporary, air supremacy and effectively fought British fighter bombers.

In July/August 1942, the liaison officer of the *Waffenamt* (ordnance department) made an official journey to Africa. He submitted a telling after action report:

Below:
PzRgt 7 was sent to Tunisia in late 1942. At that time the unit had a complement of more than 100 PzKpfw III (lang), but only 16 PzKpfw IV Ausf G armed with the 7.5cm KwK L/43; evidence that priority was being given to delivering the latter to German forces fighting in Russia. (Erdmann)



Above:
One of the oddest vehicles issued to the *Afrika Korps*: In 1941, two *mittlere Zugkraftwagen* (m ZgKw) 5t half-track vehicles were mounted with a 7.5cm L/41 gun in an armoured superstructure. Both were delivered to Libya in early 1942, where these light, very manoeuvrable vehicles were deployed against enemy armour and fortifications. (Historyfacts)

Experience report of the journey to the *Panzerarmee* in July/August:

The *Afrika Korps* was originally deployed with the standard equipment for a *Panzerdivision* and a light division. As far as it was possible, many of the tanks and vehicles had been pre-prepared to meet the special conditions on the North African battlefield. In the first instance these involved measures against the high temperatures and the sand. However, some of these measures proved to be unnecessary. The following aspects proved to have a greater effect:

a) The North African battlefield required a tactical deployment totally different to any previously used; this was in part due to the topography of the land, and also the tactics and equipment used by the enemy.
b) The unusually difficult conditions for re-supply.

The vastness of the terrain called for new Panzer tactics. These are to be based on making fast advances over long distances, and the defence of the territory gained. The infantry, and their heavy weapons, has to be positioned to the rear of the tanks; also the artillery and long range anti-tank guns. The engineers and the radio section, and naturally the *Luftwaffe*, have a special standing. The unusually heavy requirement for tractor units to tow artillery, anti-tank guns and also all other motor vehicles, which had to be delivered under very difficult conditions, resulted in great diversity of types. This non-uniform equipment resulted in insurmountable problems for

spare parts and repair. The British did not have a comparable problem.
The open terrain offers perfect conditions for aircraft and artillery observers. This fact leads to increase in losses by bombs and fire from strafing aircraft.

Defensive measures must be taken:

A. Infantry weapons.

B. Anti-tank guns.

C. Artillery.

3.) The bulk of our own artillery (le FH, s FH and 10cm K) should be self-propelled, be fitted with a gun shield and have the ability:
a) To fire from the vehicle.

Above:
One of the many vehicles used by Rommel during the North African campaign was an SdKfz 250/3 which he named *Greif* (griffon). The vehicle is parked next to two SdKfz 251 armoured halftracks from the signals company; the vehicle in the centre has been fitted with an improvised frame antenna. (NARA)

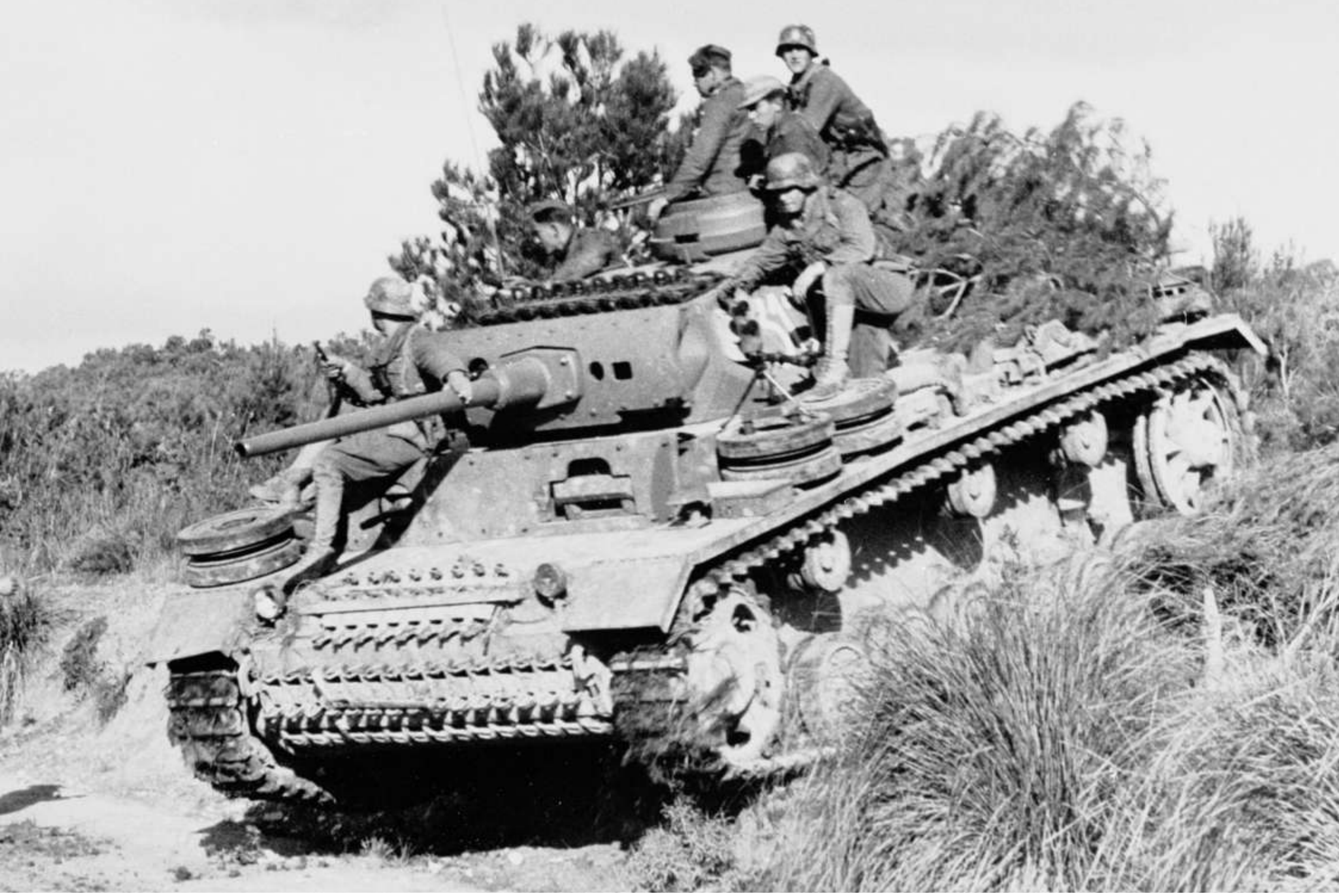
b) To dismount the gun from the vehicle to provide all-round fire.

The introduction of *Panzerartillerie* (self-propelled artillery) is of utmost importance for desert warfare. Equipment destined for units deployed here has to be given priority.

Until now three *Sturmgeschütz* (7.5cm KwK L/24) have been supplied to the *Panzerarmee* [with the *Sonderverband* 288, author]. Two were lost during their first commitment, so an evaluation of their tactical usefulness is not yet possible.

D. Panzer.

Of all the weapons in the *Panzertruppe*, the PzKpfw III with 5cm KwK L/60 and the PzKpfw IV with KwK 40 have proved to be best suited to the demands of the desert warfare. This applies to the effect of the weapon. Based on recent experiences a number of improvements have been identified:



Above:
A PzKpfw III Ausf L fitted with spaced armour on the turret and superstructure. Although protection had been improved, the tank could be defeated at normal combat range by Allied troops at using the QF 6-pounder anti-tank gun (with improved ammunition) or the 75mm tank gun. In October 1942, the *Panzerarmee Afrika* had some 100 PzKpfw III (kurz), and a similar number of PzKpfw III (lang) in service. (Historyfacts)

a) Thicker armour on the front and the roof (against attack by strafing aircraft with armour-piercing weapons up to 40mm calibre).
b) Effective anti-aircraft protection against such aircraft by *Flakpanzer*. Or possibly command tanks equipped with anti-aircraft weapons can be used in this role.

Compared with the enemy tanks recently encountered, we consider ours to be superior:

PzKpfw III (lang and kurz) out-guns the British Mk II, III, IV; and VI.
PzKpfw IV with KwK 40 out-guns all enemy tanks.
PzKpfw III with 5cm L/60 is equal to the American 'Pilot' tank.
From the point of view of the PzKpfw IV with the 7.5cm KwK (kurz) it is unsuitable for combat against tanks in the desert warfare.

The *Waffenamt* report points out the effectiveness of the modified German tactics as long as the Panzer spearheads were supported by long-range weapons and protected by the *Luftwaffe*, and that the terrain was suitable for long-range tank operations. However, the report does unveil the disastrous supply situation faced by the *Afrika Korps*: Tanks, soft-skinned vehicles and artillery tractors were not available in the required numbers which meant that vehicles could not be replaced.

The officer identifies the need for technical and organizational changes and suggests that Panzer division artillery formations be equipped with specialized self-propelled guns to give the mobility necessary for the modern mobile warfare. His request for guns able to be dismounted from a tracked vehicle matches contemporary German developments.

Furthermore calls for the development and rapid introduction of *Flakpanzer* (anti-aircraft tanks) were being noticed for the first time. His suggestion was farsighted and fully understandable, as the enemy's air force held superiority in the skies over the desert.

Only short time later, many of his suggestions would be implemented by PzDiv 43.

His small hint to the introduction of a *Sturmgeschütz* attachment is not important in this context, but is nevertheless interesting.

On 11 August 1942, a department operations battalion of the *Afrika Korps* reported:

> Tactical experiences and amendment proposals for the PzKpfw IV (7.5cm KwK 40 L/43):
>
> 1.) From the beginning, the gun proved to be superior to all previously used weapons due to its excellent penetration and accuracy. The PzGr 39 is able to destroy all enemy tanks encountered in the North Africa theatre of war at ranges of 1,500m front on, including the "Pilot". At ranges over 1,500m accuracy decreases (shimmering vision caused by the heat). With a clear view, enemy tanks were destroyed at ranges up to 2,000m.
> 2.) The enemy soon considered this tank to be dangerous, and due to its distinctive shape it became the target of concentrated fire from enemy artillery and anti-tank guns, also aircraft. For this reason it is necessary to guard the PzKpfw IV with 5cm tanks. The tank should only be used in a firefight when a worthwhile target such as the "Pilot" comes into range. Guarding the flanks of the PzKpfw IV is most important under these circumstances. It is not advisable to use the tanks for a massed attack.
> 3.) Any assignment to reconnaissance duties or flank guarding has to be avoided. The tank has to be used only for attacks against points of main effort.
> 4.) It proved to be wrong to fire more than a few rounds from the same position. The large cloud of dust sent up by the muzzle blast will always attract concentrated enemy fire.

Above:
In 1942, the *Fallschirmjäger-Brigade* 1 (*Ramcke*) was sent to North Africa to reinforce the *Afrika Korps*. The unit was equipped with number of the NSU-built *Kettenkraftrad Typ* HK 101 (SdKfz 2); a highly-mobile vehicle over desert terrain. One vehicle is towing a 2.8cm *schwere Panzerbüsche* (s PzB) 41 anti-tank gun on a *Sonderanhänger* (SdAnh 32/2) light trailer. (Anderson)

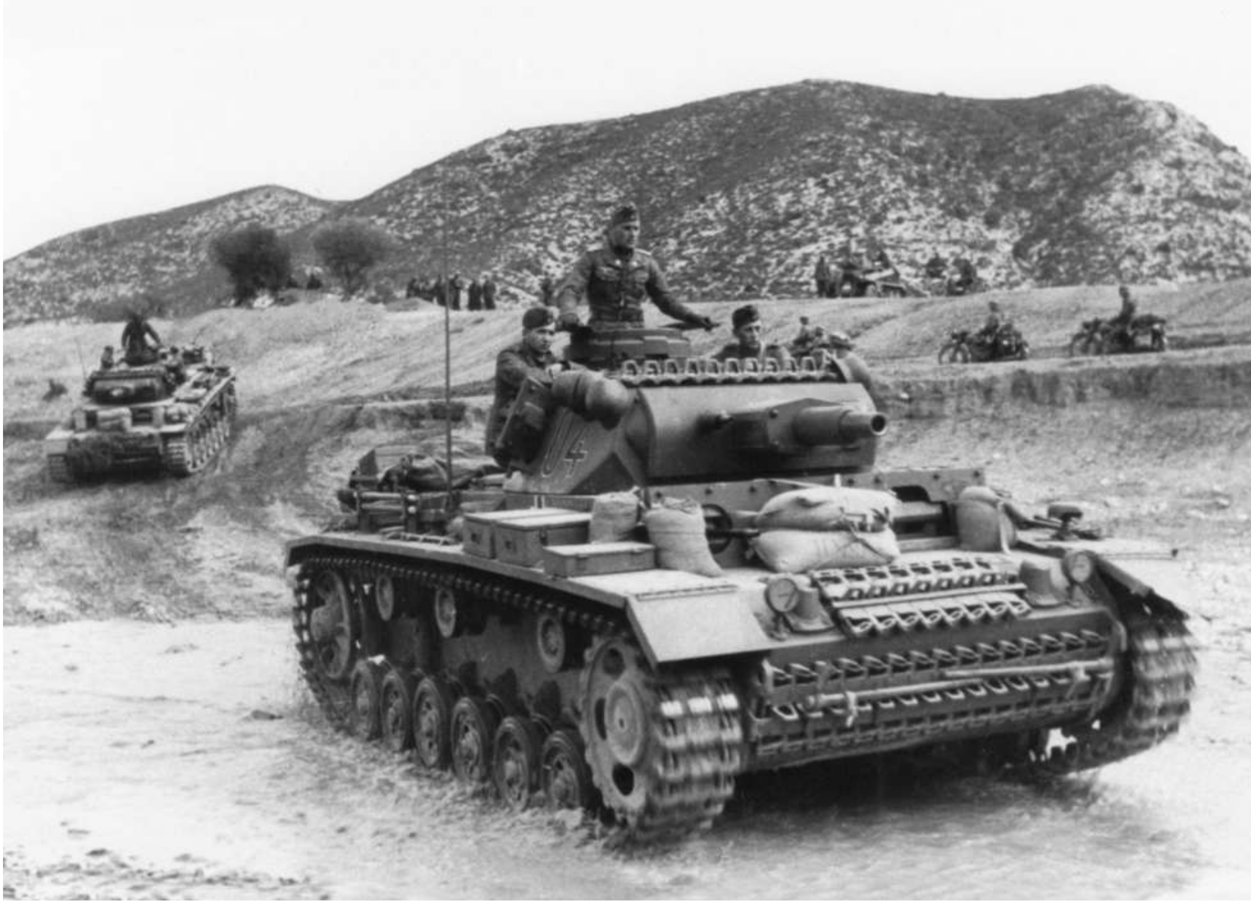
5.) The PzKpfw IV *Spezial* should not be used as a command vehicle, although it is fitted with a receiver and transmitter.
6.) As long as the tank is available in small numbers only, an armoured vehicle must be used to replenish it with ammunition.
8.) So far the long barrel of the gun, which protrudes over the front, has not proven to be a disadvantage.
9.) The running gear should be fitted with a smoother suspension system to absorb heavy shocks caused by rocky terrain.
10.) The turret and superstructure roof must be reinforced; bullet splash guards to protect the commander's cupola must be added.
11.) A travel rest for the gun barrel has to be fitted. Release of the clamp must be possible from inside the vehicle. Reason: A sudden shock can shake the liner out of the barrel.
12.) An extra ventilator must be fitted to improve the removal of cordite fumes. Reason: The fumes impede observation through the vision slits. The acrid smell affects the crew considerably… Also spent cartridge cases have to be removed quickly from the fighting compartment.

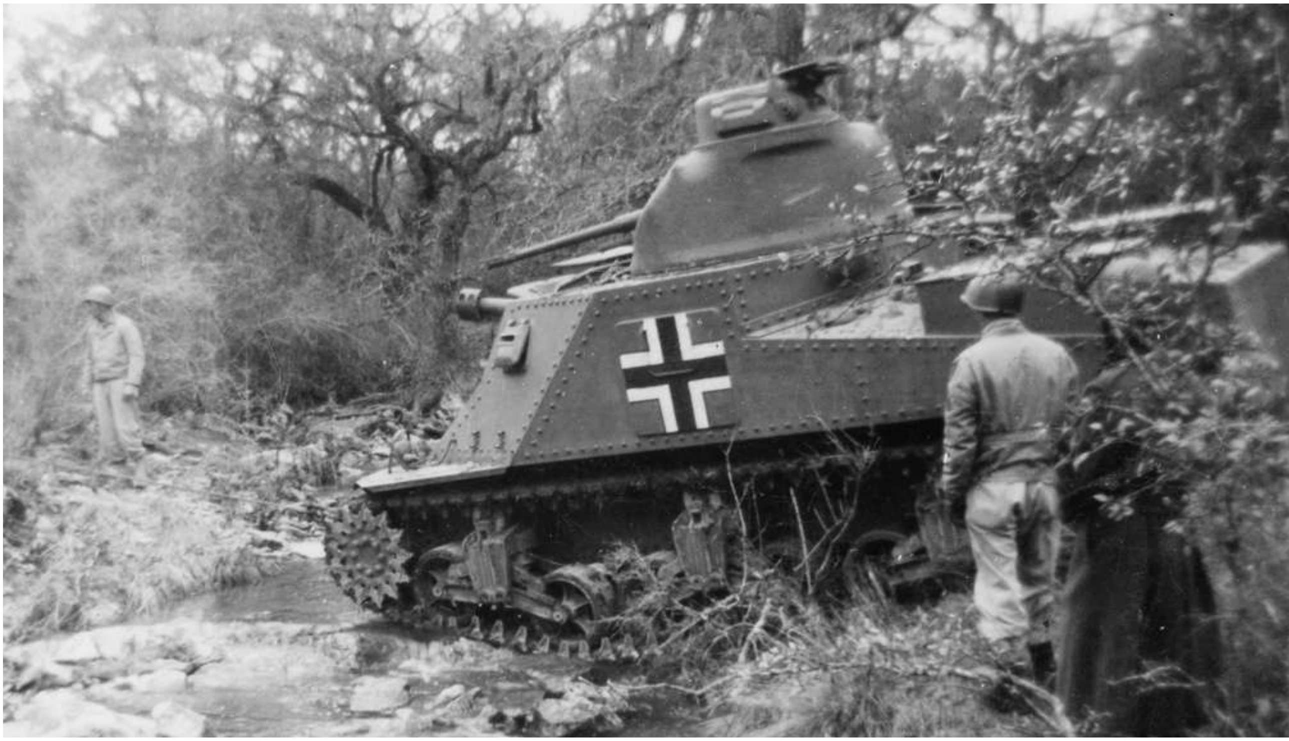
Although the improved PzKpfw IV *Spezial*, gave the Germans a weapon able to clearly defeat an adversary, was welcomed; the troop still had a number of further requirements. While tactics could be adapted in the face of new challenges, the military limitations of tanks manufactured in the mid-1930s had been reached. Furthermore, any radical development of the PzKpfw IV was deemed impossible. Frontal armour had been reinforced to 80mm, adding more weight to an already over-loaded chassis.

K.F. König, the gunner of a PzKpfw IV (lang) from PzRgt 5 in 1943, recalled:

> In early 1943 we knew that we were in a hopeless situation… I remember an unannounced visit by a number of "*Herr Spucke*" [Supermarine Spitfire, aka '*Spucke*' – Spit]. Lacking any cover, we jumped out and hid under our tank; here we felt very safe. We all were relieved when the aircraft ended their mission. The tank, however, was severely damaged; 20mm cannon fire had penetrated the thin cover plate over the engine compartment. It took a long time to get the tank back into combat condition.

Below:
Beside the 20 PzKpfw VI Tigers, it was planned for s PzAbt 501 to have 26 PzKpfw III Ausf N forming the light platoons. These were to be deployed in support of the heavy tanks, also for reconnaissance missions and perform supply duties. In July 1942, a programme was begun to fit more than 600 PzKpfw III with the 7.5cm KwK L/24 gun, which could now fire more lethal hollow-charge ammunition. (Historyfacts)





Above:
A number of early M3 Lee medium tanks, mounting the short-barrel 75mm M2 main gun, were captured from the US Army in North Africa and then used in action by German forces. The Lee had riveted armour which resulted in poor protection for the crew, and the main armament was low-powered and not very accurate. (Anderson)

The PzKpfw IV (lang) (also called '*Spezial*' by the Germans, and 'Special' by the British) had reached the pinnacle of technical and mechanical development.

After capturing Tobruk, Rommel sent his *Panzerarmee Afrika* to launch an attack on El Alamein, before advancing on Alexandria; but it was to end in a stalemate, leaving the forces of both sides exhausted. However, the British were in a somewhat better position having halted any further advances by German forces. In this situation the importance of open lines of supply became decisive; their inability to take Malta turned out to be critical for the Germans. By October 1942, British forces were numerically superior, and had almost total air supremacy.

The British had approximately 1,000 tanks with more held in reserve or under repair, among them were some 250 M4 Sherman and over 150 M3 Grant. To combat these *Panzerarmee Afrika* had only 30 PzKpfw IV (lang).

23 October 1942	PzKpfw II	PzKpfw III 5cm (kurz)	PzKpfw III 5cm (lang)	PzKpfw IV (kurz)	PzKpfw IV (lang)	PzBefWg
15.PzDiv	14	43	44	3	15	2
21.PzDiv	19	53	43	7	15	6

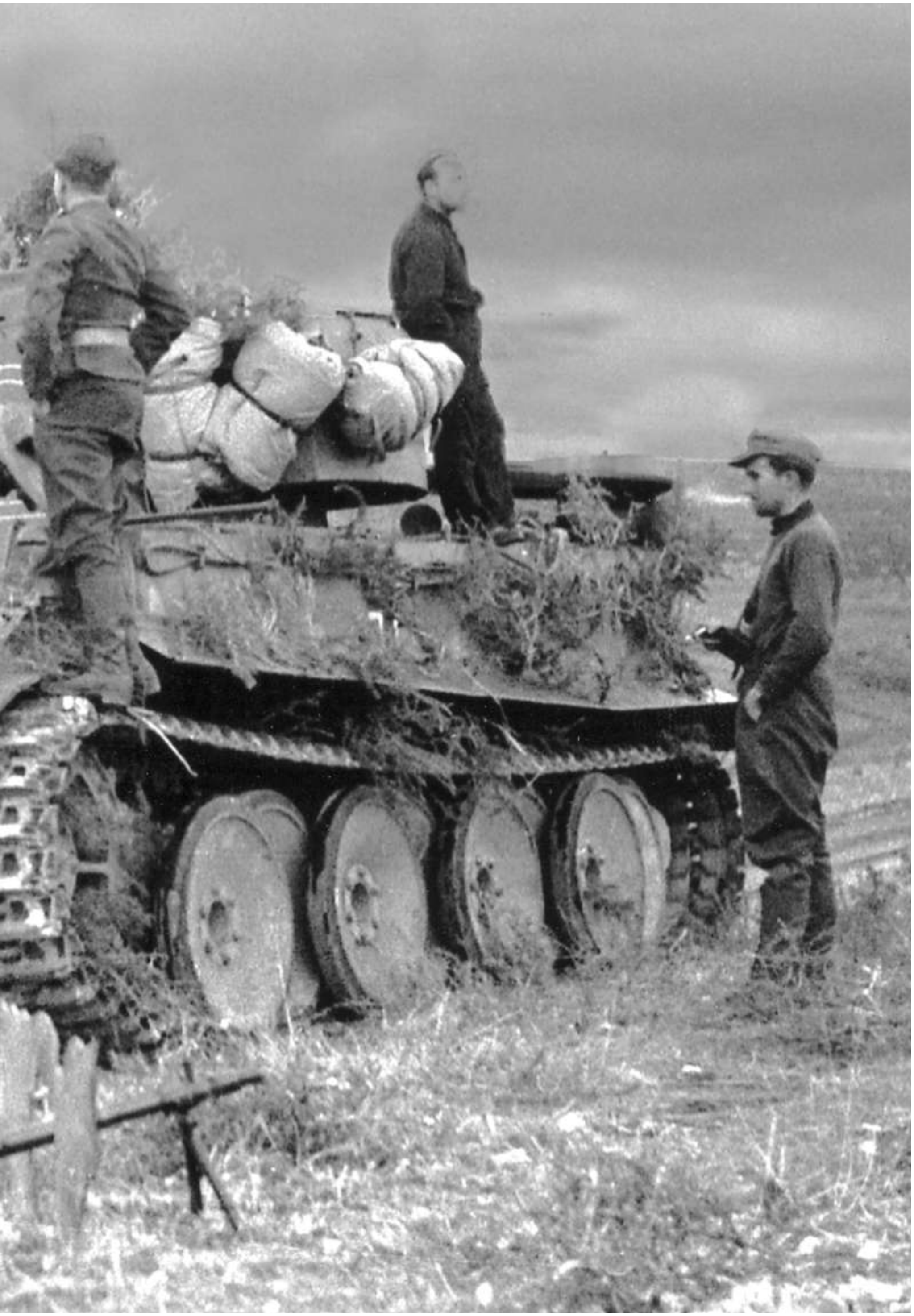
The second battle for El Alamein began with a massive barrage followed by an assault by British forces. Initially, 15 and 21.PzDiv, supported by Italian forces held off the attacks (once again proving their tactical skills), but were forced to retreat as their tanks ran low on fuel.

The first to withdraw was 21.PzDiv and Montgomery seized the opportunity to launch further attacks to smash through *Afrika Korps* positions, but Axis forces put up a resolute defence and held out. However, with some 30 remaining tanks and virtually no motor vehicles for his infantry, Rommel began to plan a tactical withdrawal. He informed Hitler on 3 November, who brusquely rejected any retreat with the words: '…you [Rommel] can show your men no other way than victory or death.'

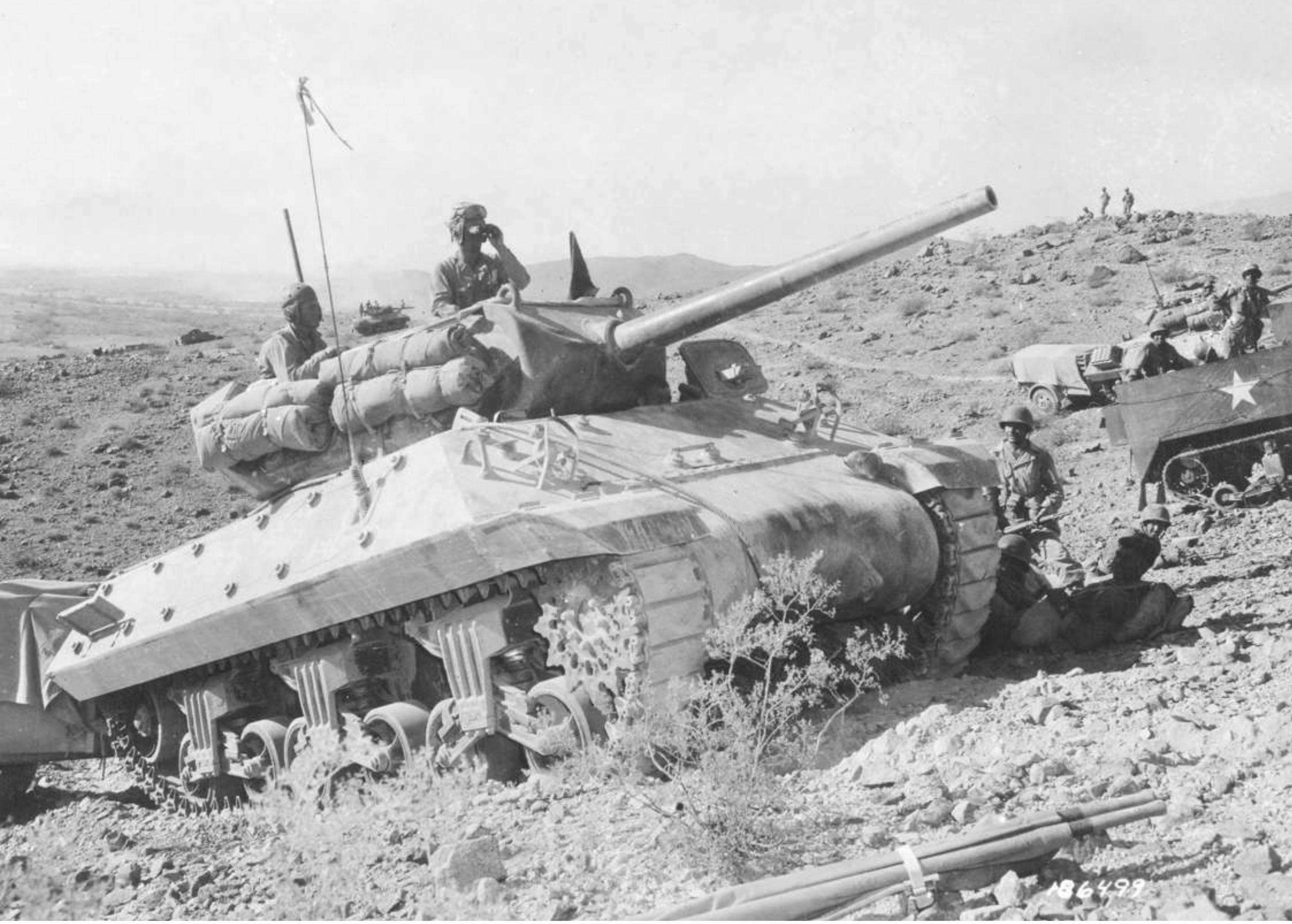
Initially Rommel had always obeyed any direct order from Hitler. However, he was now faced with steady pressure from numerous attacks by the enemy. His forces and his resolve were finally broken by a decisive attack by the British 1st Armoured Division. Now Rommel, supported by *Generalfeldmarschall* Albert Kesselring (*Oberbefehlshaber Süd*), ignored the order from Hitler and decided to withdraw his forces over a broad front.

The daily report from PzRgt 8 (15.PzDiv) dated 25 October 1942 has some interesting detail:

> 07:30: Three enemy attacks:
>
> 1.) Sixty tanks attacking west from sector L were stopped near the main line of resistance, the enemy is laying smoke. Own forces committed: I./PzRgt 8, II./ and III./InfRgt 382, artillery and a battery 8.8cm FlaK (not yet in position).
> 2.) Enemy moves to sector J, heading west to the south of III./PzGrenRgt 115. II./PzRgt 8 is committed here, combat is still in progress, the enemy lays smoke.
> 3.) Forty tanks are approaching from sector J to I./PzGrenRgt 115, eight *Karetten* (tankettes) have been destroyed, the gap between I./PzGrenRgt 115 and II./InfRgt 125 was closed.
> 4.) 10:30: Divisional Commander to Major Schemmel: At point 407, there are 60 enemy tanks. Their attack is anticipated under cover of smoke towards the northwest. The 1.Italian PzAbt and II./PzRgt 8 will counterattack immediately.
>
> 12:10: Notice to 164.le AfrDiv: II./InfRgt 382 has left their old positions. Enemy broke through with 80 tanks.
>
> 12:28: Radio message to PzRgt.8 (*Kampfgruppe Süd*): This attack has to be halted by any means. *Oberst* Teege will attack with his tanks.
>
> 13:40: Call from Major Schemmel: Own tank assault has failed. Commander of Italian IV./PzRgt 133 has been killed. The battalion retreated. Five German tanks carried on fighting, two were knocked out, and the remaining three have retreated.
>
> 15:10: Assault by PzRgt 8 approaches the enemy. Twenty German tanks supported by 40 Italian tanks, target sector L. Their flanks are menaced by enemy tanks from sector K.



Left:
The crew of a PzKpfw VI Tiger Ausf E from s PzAbt 501 has made a minimal attempt to camouflage the outline of their vehicle with foliage. Any attack which involved the Tiger required careful planning after a reconnaissance to evaluate the terrain and locate anti-tank mines laid by the enemy. It would then proceed with mine clearing pioneers in close support. (Anderson)



Above:
The 3-inch Gun Motor Carriage M10 was designed when the US Army formed the Tank Destroyer Force. It was built on a modified M4A2 Sherman chassis and armed with a 76.2mm Gun M7 mounted in an open rotating turret. Although lightly armoured, it performed well against all German tanks except the PzKpfw VI Tiger. (NARA)

15:35: Notice from PzRgt 8: Own assault to point 488 is going well. Italians arrived 45 minutes late.
16:16: Staff company of the enemy tank brigade opposite PzRgt 8 calls for urgent help.
16:30: Notice from PzRgt 8: Enemy artillery is setting up positions near point 30, and III./ArtRgt 33 is ordered to take measures.
16:50: Notice from PzRgt 8: Assault on point 488 is continuing at slow pace. Italians follow slowly, fire from the flanks.

Observations:
The British deliberately invite the German tanks to charge. His new tanks can open fire at ranges between 2,000 and 2,300m without being effectively combated by most of our tanks. The enemy made great use of smoke to bring his infantry to the front and to conceal the retreat of his

> tanks. Again, the enemy had heavy losses and casualties. His assaults were beaten back, 119 tanks were destroyed due to courageous fighting by our forces.
>
> *Panzerlage* by the evening: 11 PzKpfw II, nine PzKpfw III, nine PzKpfw III *Spezial*, two PzKpfw IV, five PzKpfw IV *Spezial*, and one PzBefWg. Approximately 25 tanks have been lost.

The report shows that despite British forces being numerically superior, PzRgt 8 managed to achieve a stunning success with relatively low losses.

In early November, the *Panzerarmee Afrika* was in a parlous state, as no further reinforcements were to be authorized. But, on 8 November PzAbt 190 (90.le Div) arrived, followed by PzRgt 7 (10.PzDiv) on 5 December. Furthermore, *schwere Panzerabteilung* (s PzAbt) 501 was sent to Tunisia.

Final strength	PzKpfw II	PzKpfw III 5cm (lang)	PzKpfw IV (kurz)	PzKpfw IV (lang)	PzBefWg
90.le Div	7	52	0	10	2
10.PzDiv	21	105	4	16	9

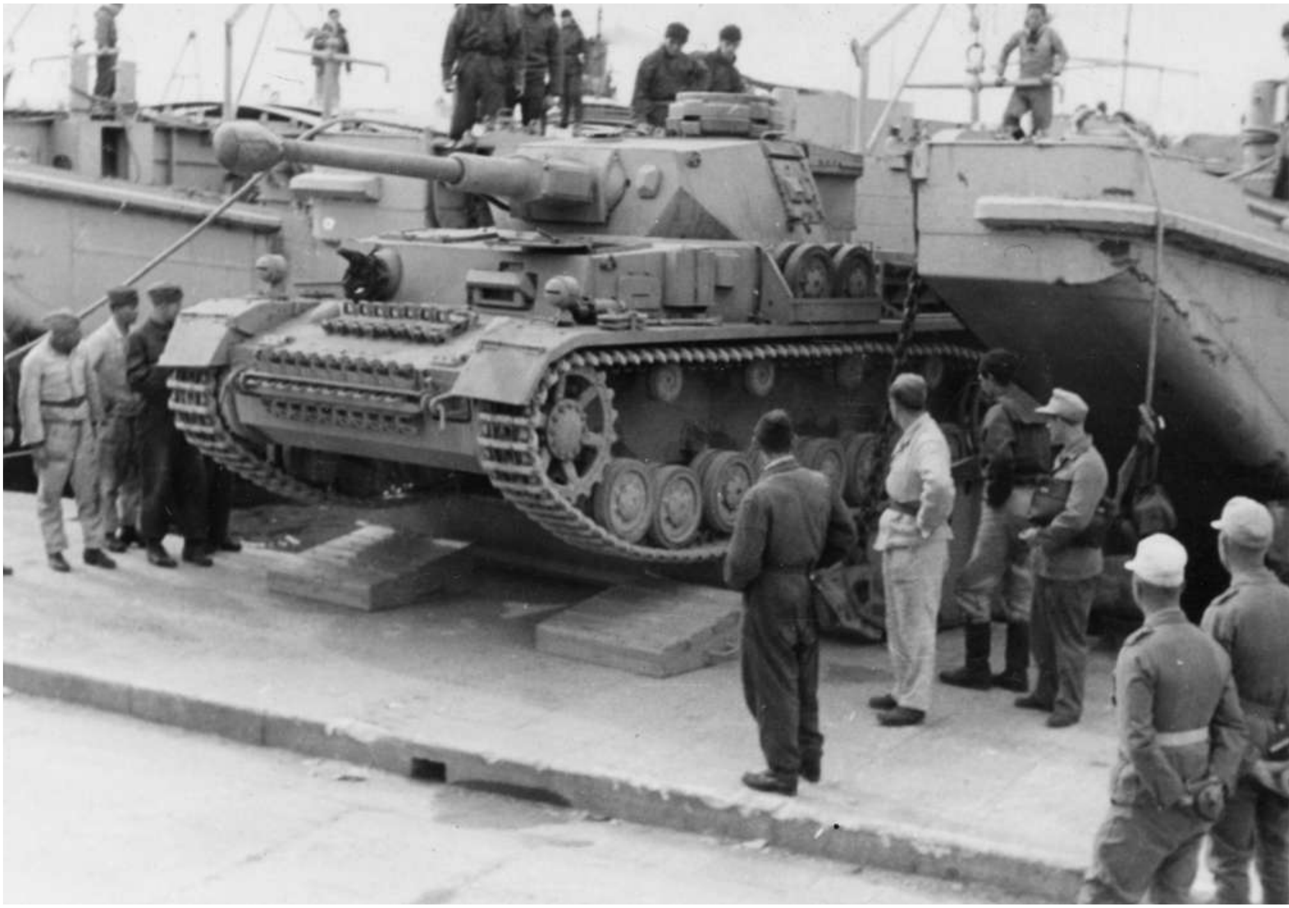
Rommel had repeatedly asked for a heavy tank detachment. However, the development and production of the PzKpfw VI Tiger had proceeded very slowly; only 38 had been completed by the end of November 1942. The first were sent to s PzAbt 502 which was in combat near Leningrad. Also in November, s PzAbt 501 was in the process of being established ready for deployment to North Africa.

In this tense situation, Operation Torch came as a further shock to the *Panzerarmee Afrika*. On 7 November, US forces led three independent landings by amphibious forces to capture the important harbour cities of Casablanca, Oran and Algiers. After clearing the local situation, the Allied forces began their advance east towards Tunisia, and due to having overwhelming air and battlefield superiority, German forces had to retreat.

The new reinforcements could only avoid the inevitable collapse of the *Afrika Korps*. On 23 November, the first three Tigers of s PzAbt 501 were landed in Tunisia; delivery of further tanks was slow and somewhat haphazard.

The PzKpfw VI Tiger was far superior to all Allied tanks including the M4 Sherman. The few available Tigers were concentrated in battle groups, which were normally equipped with PzKpfw IV *Spezial* and 7.5cm PzKfw III (kurz).

However, these tactical theories did not always work on the Tunisian battlefield. Quite often, the difficult terrain of rocks and thick mud forced units to move the heavy tanks on paved roads. However, British sappers were adept at laying anti-tank mines, indeed many Tigers were immobilized by damage to the running gear after striking one of these weapons. In early



Above:
A PzKpfw IV (lang), possibly destined for PzRgt 7 of 10.PzDiv, being unloaded from a *Marinefährprahm* (MFP – landing vessel) at Bizerte in early 1943. The PzKpfw IV (lang) and the PzKpfw VI Tiger, were the most powerfully-armed tanks operating in the North Africa theatre. (Anderson)

March 1943, seven Tigers were lost during *Unternehmen Ochsenkopf* (Operation Oxhead). Although only immobilized, their location made it impossible for each to be repaired or recovered. German pioneers were ordered to destroy them with explosives before they could fall into enemy hands.

In January 1943, s PzAbt 501 was equipped with 20 Tigers supported by 25 PzKpfw III. Another Tiger unit, the newly established s PzAbt 504, received orders to move to North Africa in February. In March/April 1943, the unit with 11 Tigers arrived at Bizerte. The Tigers were deployed to great effect; on 24 April, combined report from s PzAbt 501 and 504 noted the destruction of 75 enemy tanks during a four-day battle near Tunis.

On 13 March 1943, Major Lüders, the commander of s PzAbt 501 sent an after action report:

> A concentrated commitment using Tigers at the point of main effort will result in success; this is due to their strong armour and powerful gun and also their effect on the morale of enemy troops.

II.) Transition.

Due to the size and weight of the tank a thorough advanced reconnaissance of the route is required. Passing through narrow villages can be difficult due to the long gun.

Abrupt steering movements must be not be used on muddy or sandy ground. Although the Tiger has better driving characteristics than lighter tanks, a close examination of the ground is necessary. A bogged-down Tiger is difficult to recover.

IV.) Attack.

Apart from initial single deployments, the battalion was committed only once for a large-scale attack over a broad front in open terrain. Due to terrain conditions the majority of deployments took place in close proximity to paved roads, mainly in the mountains.

Every opportunity to spread out and form a broad front has to be exploited…

The light [support] tanks have to cover the flanks, and will guard the Tiger tanks when crossing obscured terrain or in the enemy's infantry zone.

The 8.8cm KwK will only be used when stationery. Enemy tanks will be fought only at the closest possible ranges, and continue firing for as long as possible at the retreating tanks. Knowledge of the tanks used by the enemy is of utmost importance to the Tiger crew. Do not forget: combat against tanks is the main duty for the Tiger.

Single tanks can be used with good success on main roads to fight fortified enemy positions. In principle the Tiger will assume the duties of the

Below:
In November 1942, US forces landed in North Africa (Operation Torch) and were equipped with a large number of M4 Sherman medium tanks. Armed with a 75mm gun, and readily available, the type began to change tank war in favour of the Allied forces. However, the PzKpfw IV (lang) and the PzKpfw VI Tiger were superior and destroyed large numbers, but the highly-efficient US armaments industry was able to deliver replacements in ever increasing numbers. (NARA)

Right:
The wrecks of two PzKpfw VI Tigers from s PzAbt 501, which fought alongside PzRgt 7 during *Unternehmen Ochsenkopf* (Operation Oxhead) in March 1943, are being inspected by US Army personnel. During the operation six Tigers were lost; two to mechanical failure, two to anti-tank fire, one to artillery fire and one struck a mine. All were impossible to recover, which forced the commander of the unit to give his order for them to be destroyed. (NARA)

> *Sturmartillerie*. This, however, shall be the exception and will be valid only until enough assault guns are available.
> During a firefight the Tiger must be turned front-on to the enemy (impact angle and armour thickness).

British troops found ways to combat the heavily-armoured tank: The Tiger could be defeated.

A detail from technical report No.6 dated March to May 1943:

> Losses by direct enemy action.
> Chassis No:

250031	Destroyed by concentrated anti-tank and artillery fire, also from a Churchill tank. An exact evaluation is not possible, since the tank remains behind enemy lines. The tank was destroyed.
250013	Damage to the final drive by enemy fire. Advancing enemy troops impeded recovery. The tank was blown up.
250024	Failure caused by an anti-tank gun hit in left rear of the engine

	compartment. Since the recovery was not possible, the tank was blown up.
250017	Ran over a mine after passing 250013. Again recovery was impossible, so the tank was blown up
250021	Recovery was not possible after a final drive was damaged. Had to be blown up
250028	An artillery shell hit the side of the superstructure which split the armour.

On 13 May 1943, the *Deutsches Afrika Korps* in Tunisia surrendered. After the defeat, the word '*Tunisgrad*' began to be used (secretly) in Germany. Axis forces lost some 300,000 personnel (casualties and prisoners), much higher than those suffered at Stalingrad.

The German campaign in North Africa ended in a defeat by superior Allied forces which were supported by efficient supply lines and protected by their free-ranging air forces. Like the Soviet defenders of Stalingrad, the western Allies had sent a strong signal; the German *Panzerwaffe* could be defeated.

CHAPTER 5

ZITADELLE: MASS ATTACK ON RUSSIA

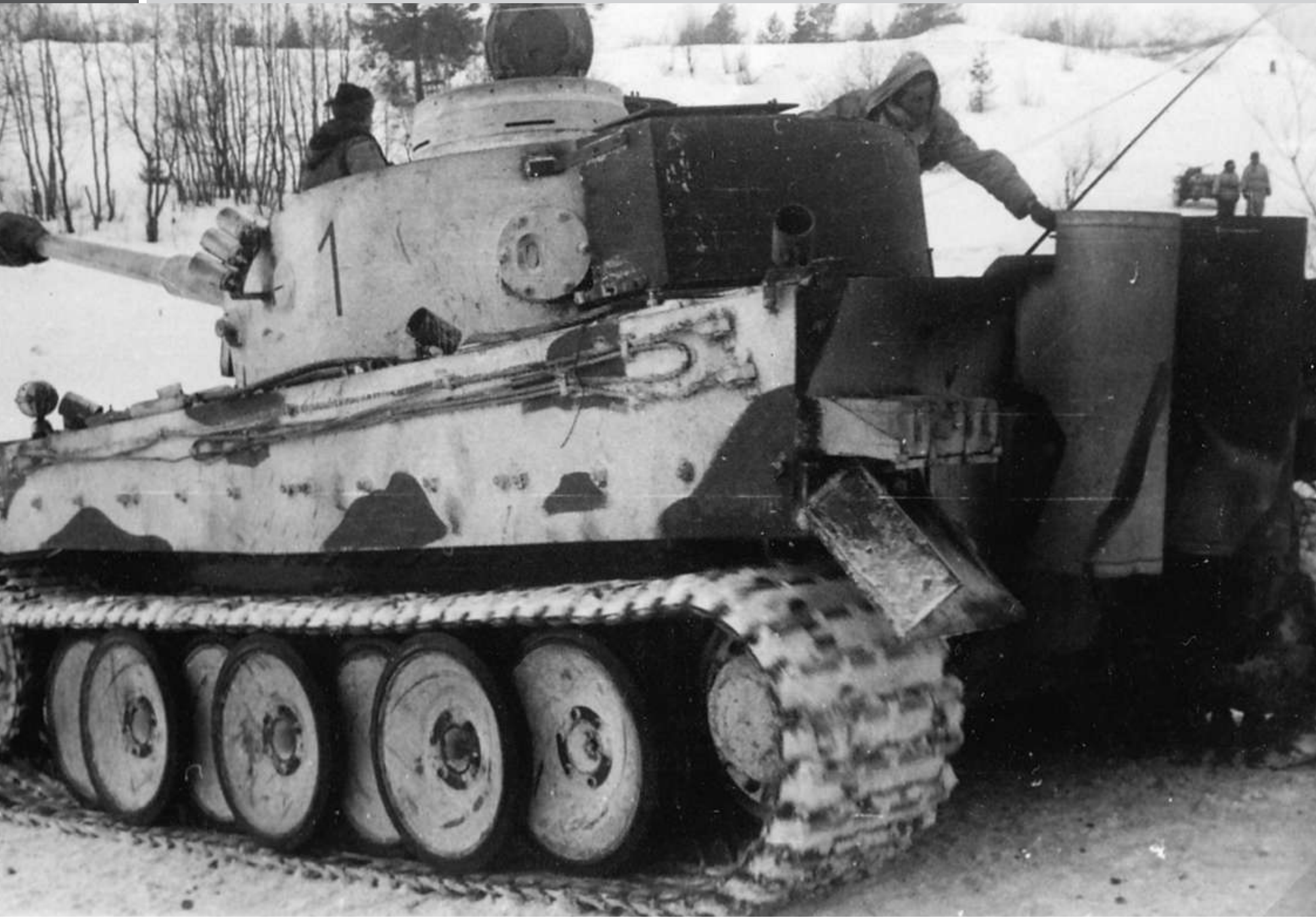
After German forces surrendered at Stalingrad on 31 January 1943, Soviet forces felt sufficiently confident to begin an advance to liberate the southern regions. German forces occupying large areas of the Caucasus faced the threat of being cut off and annihilated. Alert to this possibility, the remaining units of *Heeresgruppe* (Army Group) A and *Heeresgruppe* Don began to retreat in early 1943, which allowed the Soviets to recapture Rostov, Kharkov, Belgorod, and Kursk. *Heeresgrupp*e A was then withdrawn to establish defensive positions at the Kuban bridgehead and along a line from Rostov, Dnepropetrovsk and Orel.

Organizational changes in 1943

In April 1943 when all *Schnelltruppen* (rapid forces) were disbanded, a new service arm, the *Panzertruppen*, was created. The new force now included the *Panzergrenadiere* (armoured infantry) and the *Infanterie* (motorized), mechanized infantry. Furthermore, *Panzerjäger* (tank destroyers) and even *Sturmpanzer* (assault tanks) were incorporated.

The new *Panzerdivisions* (PzDiv) would have a unified structure as PzDiv 43; its *Panzerregiment* (PzRgt) contained two *Abteilungen* (battalions) each with four companies. Subsequently it was planned to introduce a mid-term regrouping programme. The *leichte Kompanien* (light companies) were dropped, the new *Panzerabteilungen* (PzAbt – tank battalions) had only *mittlere Kompanien* (medium companies) each with an authorized strength of 22 tanks. It was planned that the new medium PzKpfw V Panther should be the only tank used for combat. However, slow production of the Panther did

Left:
Russia 1943: The radio operator of a PzKpfw V Tiger Ausf E prepares food for himself and his crewmates. The smoke candle dischargers on the turret indicate that this is an early production tank. The port for the co-axial *Maschinengewehr* (MG) 34 is visible in the massive gun mantlet. (Getty)



Above:
The first unit to be issued with the PzKpfw VI Tiger Ausf E was *schwere Panzerabteilung* (s PzAbt) 502. The tank has been fitted with a large turret basket (painted dark grey), and has *Schrapnellmine* (S-mine) dischargers mounted on the superstructure. (Anderson)

not allow the *Panzerregiment* to equip two battalions with this new tank. Initially it was decided, as an interim solution, that only one battalion would have the Panther, the second would receive PzKpfw IV (lang). Furthermore, it quickly became clear that issuing each company with 22 tanks could not be realized. As noted in Order of Battle documents, most units received a reduced allotment of 17 tanks for each medium company, by removing a *Zug* (platoon). The regimental staff company was to be issued with *Sonderpanzer*, [see page 127] to support combat echelons.

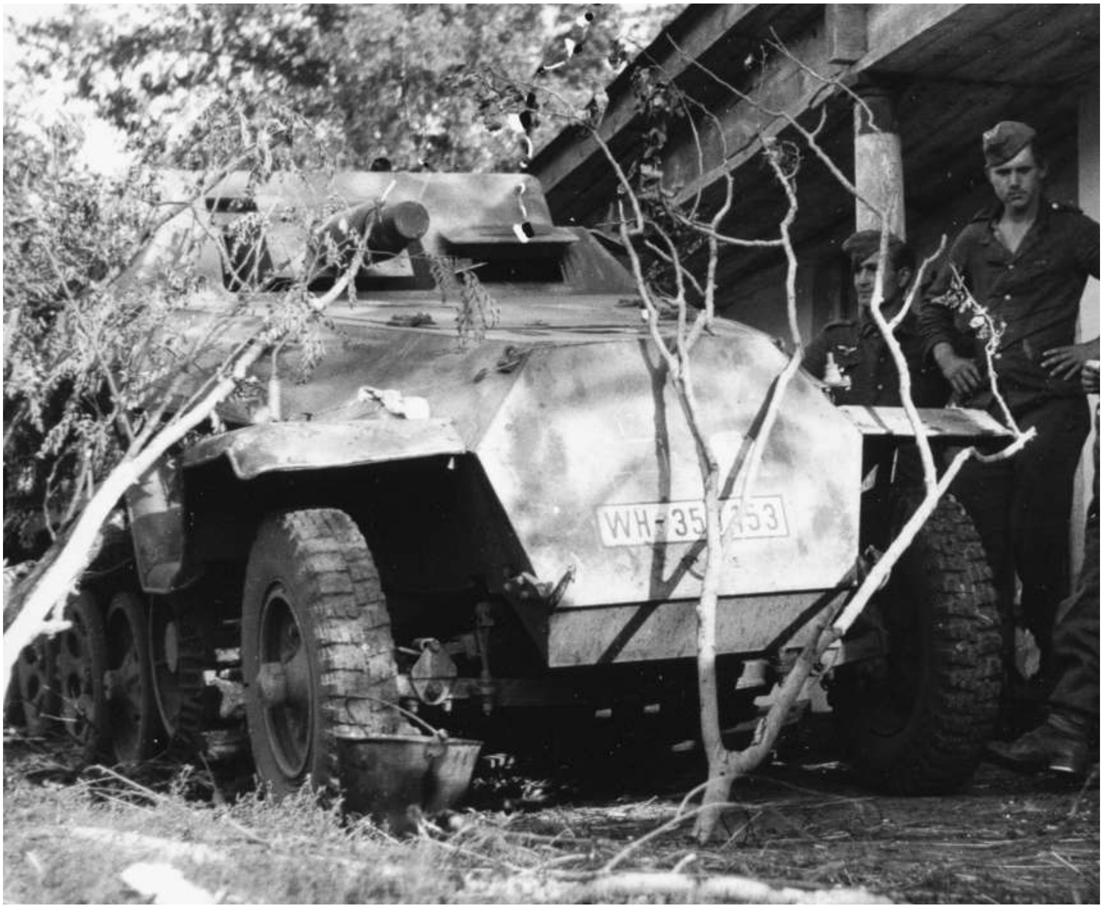
Further changes were introduced with PzDiv 43. The two *Schützen* (mechanized infantry) regiments were replaced by two *Panzergrenadier* regiments; one equipped with SdKfz 251 armoured personnel carriers. The *Panzerjäger* (tank hunter) battalion had converted to *Selbstfahrlafette* (self-propelled guns), the artillery regiment received one *Panzerartillerie-Abteilung* (tank artillery battalion) with six 15cm *Hummel* (Bumble Bee) and twelve 10.5cm *Wespe* (Wasp) self-propelled guns. The *Kradschützen* (motorized infantry) reconnaissance battalion was replaced by the more tactically useful *Panzeraufklärungabteilung* (armoured-reconnaissance battalion). All other subunits were adapted to the new operational requirements.

The changes were carried out through 1943, and long into the next year. However, the great tank battle at Kursk was fought by units organized under the older structures, which showed a wider variety of tanks. In autumn 1943, the structure of PzDiv 43 became valid. The following tables clarify the differences between the Panzer division of December 1941 and that of 1943.

Sonderpanzer

This was never an official German term. However, it was used repeatedly to describe special-purpose tanks ranging from *Flammpanzer* (flame-thrower tanks), *Ladungsleger* (remote-controlled demolition charge carriers) to *Sturmpanzer* (assault tanks). These vehicles were normally issued to special units, PzAbt(Fl) for the *Flammpanzer*, and PzAbt(Fkl) for the *Ladungsleger* and finally StuPzAbt for the *Sturmpanzer*.

Below:
In late1942, the combat strength of the *Panzergrenadiere* was increased by the introduction of *mittlere Schützepanzerwagen* (m SPW) in the heavy companies. The SdKfz 251/9, armed with the short-barreled 7.5cm StuK 38 L/24 (as mounted in the PzKpfw IV) was usually referred to as the *Kanonenwagen*. The vehicle is in service with PzGrenDiv Grossdeutschland. (NARA)



Above:
A PzKpfw VI Tiger Ausf E of s PzAbt 502 painted in winter camouflage positioned in a snow-clad forest. The vehicle is fitted with *Winterketten* (winter tracks) which gave the heavy tank better mobility than the Panzer III and IV. However, marsh-type terrain, a common feature on the northern front, would cause serious problems. (Anderson)

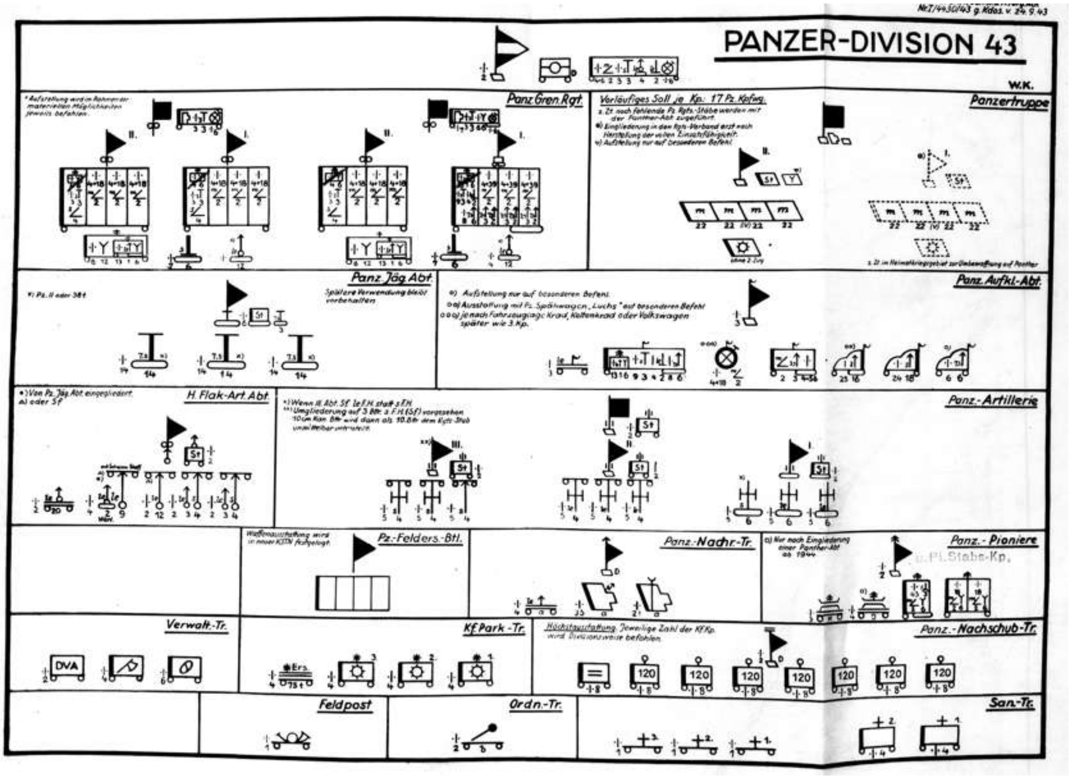
Flammpanzer

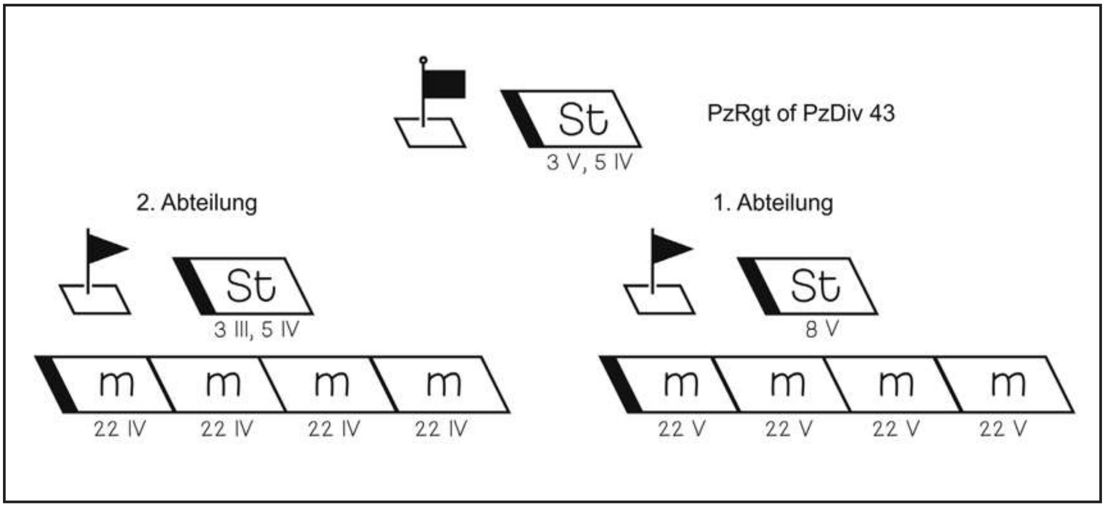
Flame-thrower tanks were in service with all nations at the beginning of the war. They were developed for defeating reinforced enemy positions [bunkers], and were often used for house-to-house combat. In 1940, Germany began to install *Flammenwerfer* (flame weapon) on PzKpfw II and PzKpfw III tanks and later the SdKfz 251/17 armoured half-track vehicle. A small numbers of captured French B1 tanks were also used, and towards the end of war even some *Panzerjäger* 38(t) *Hetzer* (Baiter) were so equipped. The first *Flammpanzer* using the PzKpfw II Ausf D/E were combined into specialized units at army group level. However, this was not a success and most of the vehicles were rebuilt as self-propelled tank destroyers. In 1942, PzKpfw III tanks were used as the basis for a further 100 *Flammpanzer*. These vehicles were allotted in platoon strength and issued to the staff companies of selected Panzer divisions:

Allotment of *Flammpanzer* III in May 1943

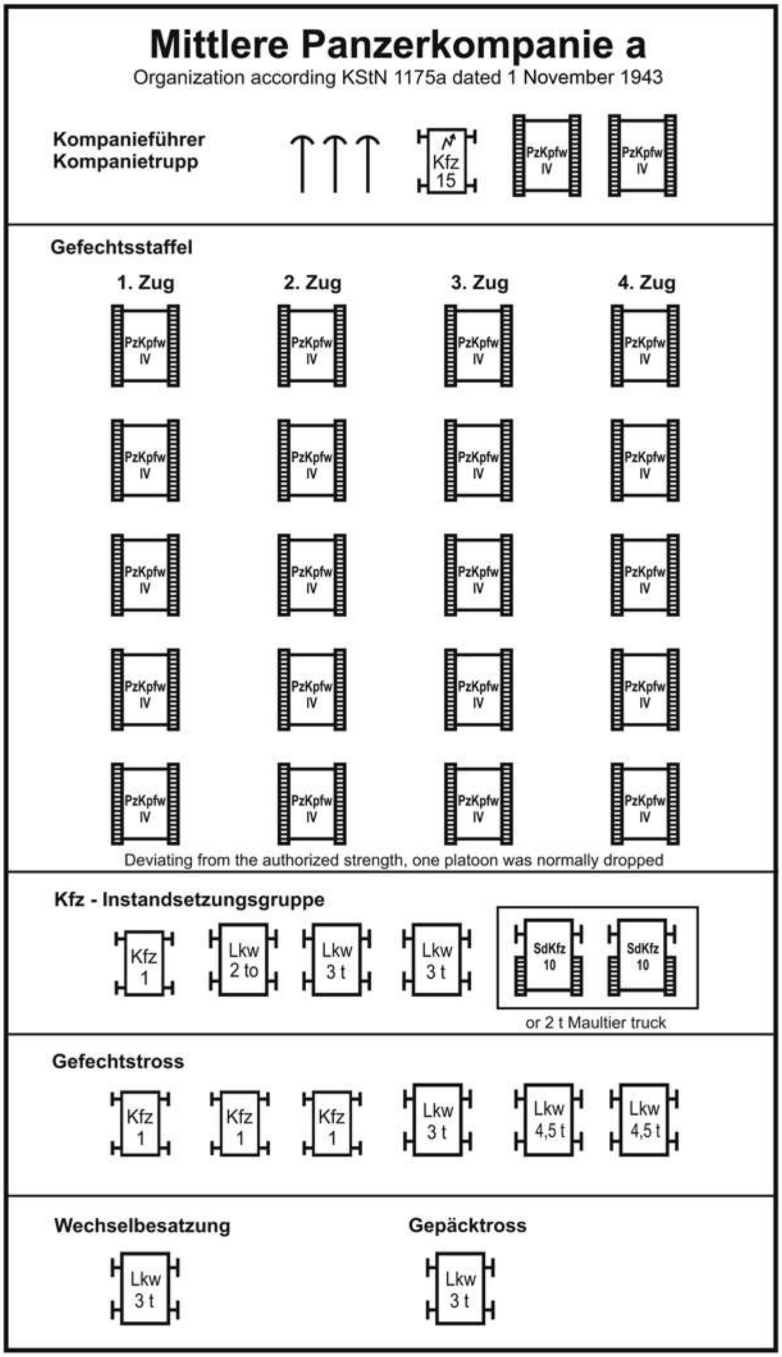
1.PzDiv	6.PzDiv	14.PzDiv	16.PzDiv	24.PzDiv	26.PzDiv	PzRgt 'GD'
14	15	7	7	14	14	28

Panzerdivision 43: basic organizational structure


Nr.I/4450/43 g.Kdos. v. 24.9.43
PANZER-DIVISION 43
W.K.
Panz.Gren.Rgt.
Vorläufiges Soll je Kp.: 17 Pz.Kpfwg.
Panzertruppe
Panz.Jäg.Abt.
Panz.Aufkl.-Abt.
H.Flak-Art.Abt.
Panz.-Artillerie
Pz.-Felders.-Btl.
Panz.-Nachr.-Tr.
Panz.-Pioniere
Pz.Pi.Stabs-Kp.
Verwalt.-Tr.
DVA
Kf.Park-Tr.
Panz.-Nachschub-Tr.
Feldpost
Ordn.-Tr.
San.-Tr.
St
120


St
3 V, 5 IV
PzRgt of PzDiv 43
2. Abteilung
St
3 III, 5 IV
m
22 IV
m
22 IV
m
22 IV
m
22 IV
1. Abteilung
St
8 V
m
22 V
m
22 V
m
22 V
m
22 V

Medium Tank Company ‘a’


Mittlere Panzerkompanie a
Organization according KStN 1175a dated 1 November 1943
Kompanieführer
Kompanietrupp
Kfz 15
PzKpfw IV
PzKpfw IV
Gefechtsstaffel
1. Zug
2. Zug
3. Zug
4. Zug
PzKpfw IV
Deviating from the authorized strength, one platoon was normally dropped
Kfz - Instandsetzungsgruppe
Kfz 1
Lkw 2 to
Lkw 3 t
Lkw 3 t
SdKfz 10
SdKfz 10
or 2 t Maultier truck
Gefechtstross
Kfz 1
Kfz 1
Kfz 1
Lkw 3 t
Lkw 4,5 t
Lkw 4,5 t
Wechselbesatzung
Lkw 3 t
Gepäcktross
Lkw 3 t

Information taken from all surviving experience reports suggests that the *Flammpanzer* did never prove to be successful. A smaller and much cheaper vehicle, such as the SdKfz 251, was more mobile which allowed it to be deployed against a wider range of targets.

Funklenkpanzer

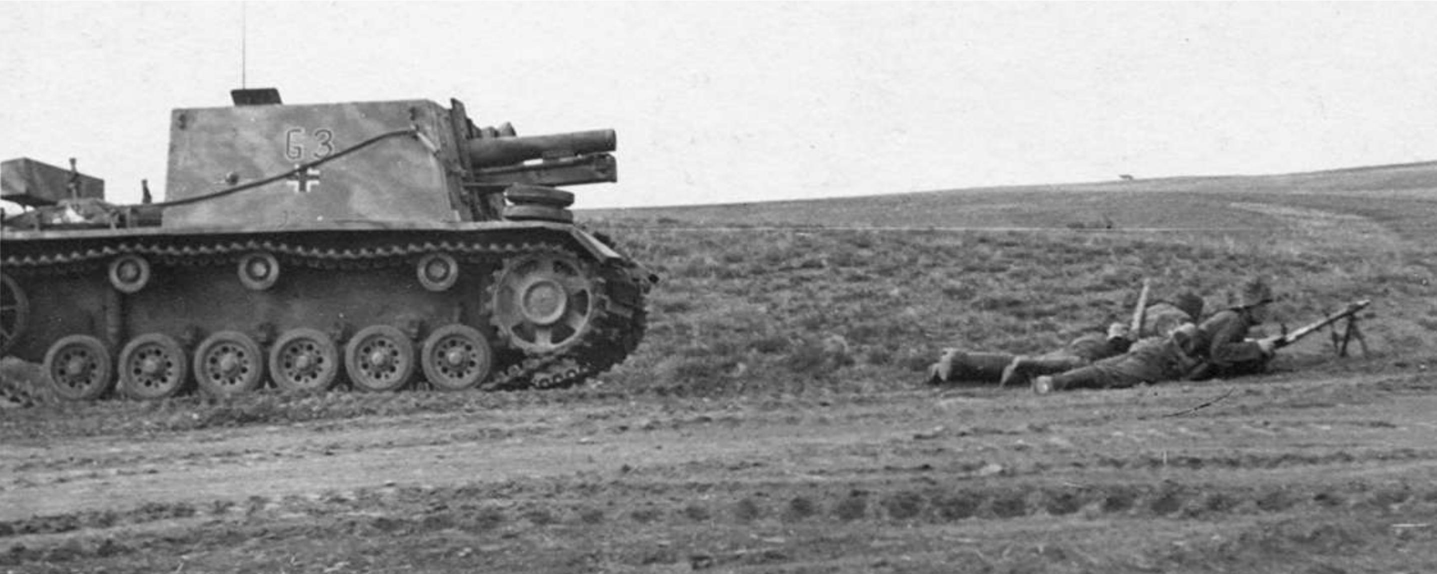
Mines represented a constant danger to German tank formations, and caused numerous losses. Although most of the tanks suffered only light damage, they had to be recovered and taken back for repair which would deplete the combat strength of a unit. Unlike many other armies, Germany relied on *Ladungsleger* to 'clear' complete tracts of land before or during an attack by dropping a high-explosive charge. In 1941/42, the first battalion-size unit, PzAbt 300 (Fkl), was established. The battalion fought on many fronts, including the siege of Sebastopol. During 1942, the unit was renamed to PzAbt 301 (Fkl), and a second PzAbt 302 (Fkl) was established. At that time, all FklAbt were equipped with Borgward BIV demolition charge carriers, controlled from a *Leitpanzer*; special PzKpfw III tanks fitted with radio-control equipment.

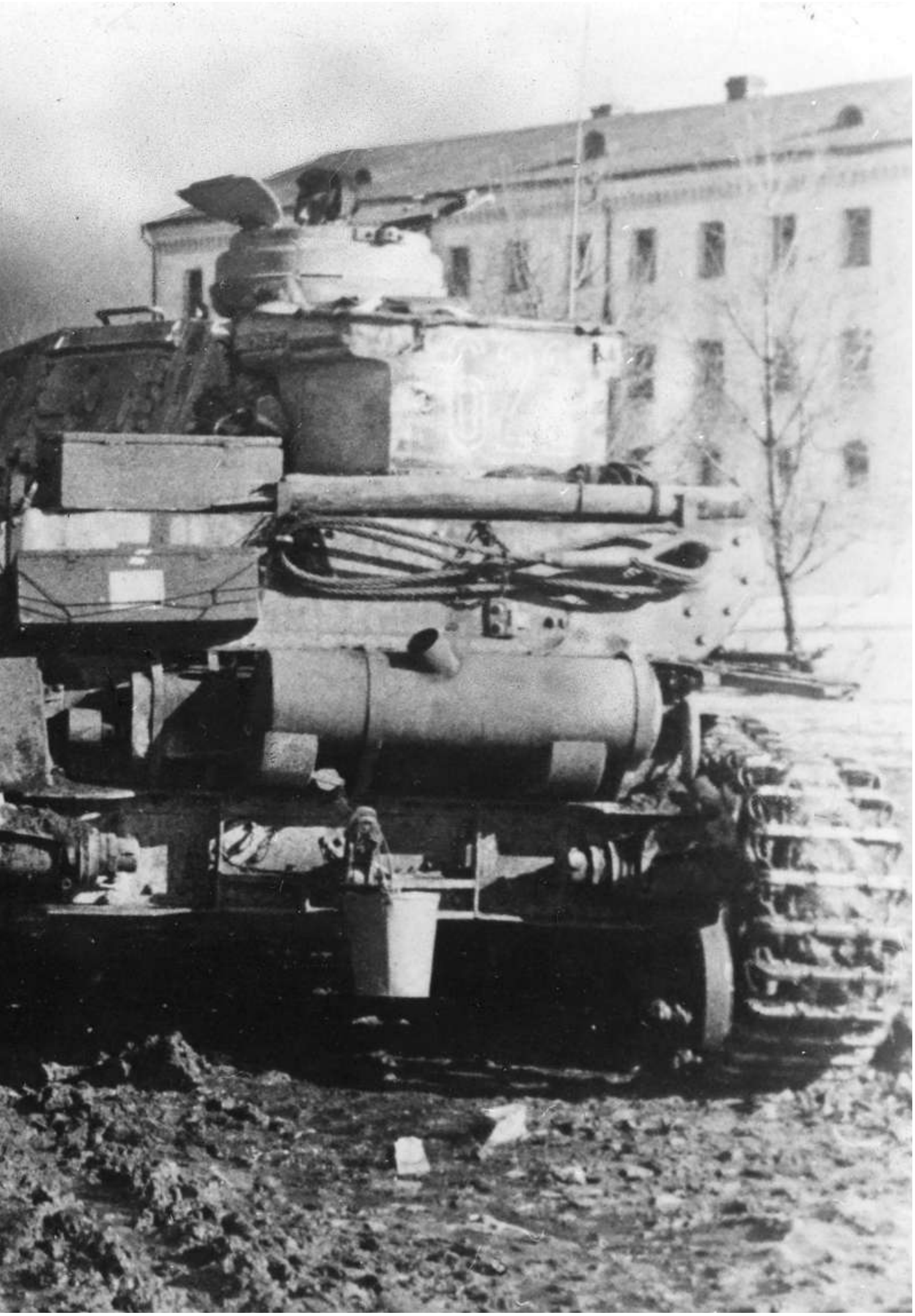
In 1943, a major reorganization was undertaken. PzAbt 302 (Fkl) was disbanded, and all subunits were combined under '301'. Now the single companies were allotted to the *Panzerdivisionen* in order to create an effective direct level of command. During the same period the majority of PzKpfw III equipped as *Leitpanzer* were replaced by *Sturmgeschütz*.

Sturmpanzer

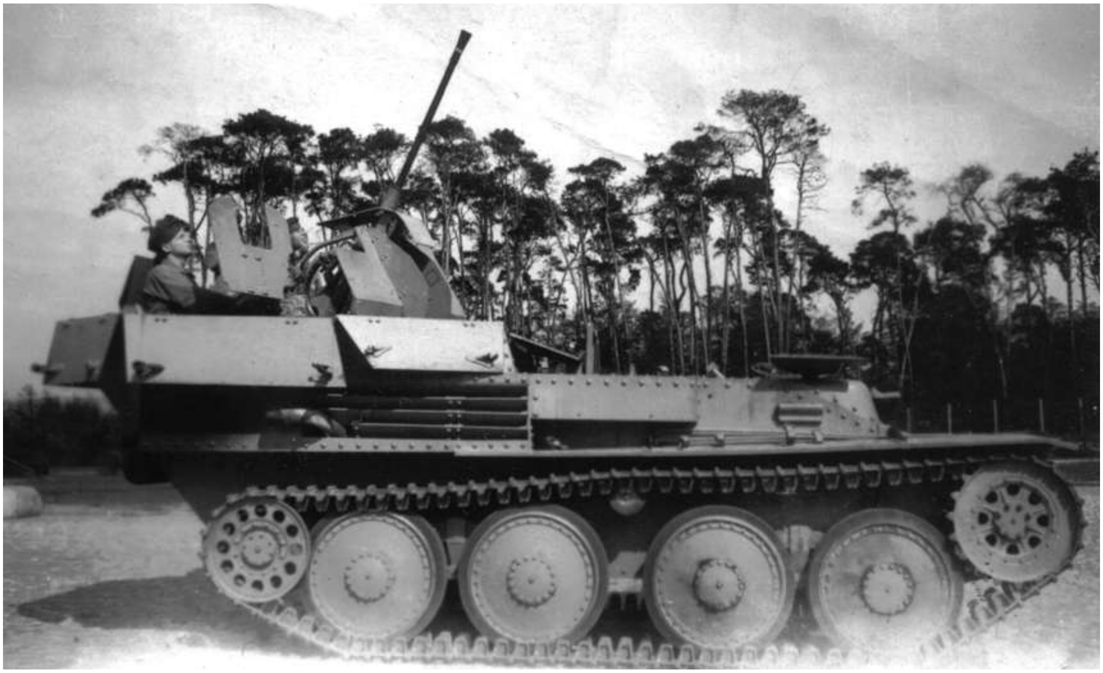
These well-armoured specialized vehicles were intended to provide heavy-support fire close to the frontline. In some respects, the role of the *Sturmpanzer* was identical to that of the *Sturmgeschütz*. Indeed, for a long time the *Sturmartillerie* had called for a more powerful weapon to expand its range of commitments. In late 1942, using experience gained during the heavy street fighting in Stalingrad, the *Sturminfanteriegeschütz* (infantry assault gun) was developed and a limited number built. The solution was a

Below:
During the fighting at Stalingrad, a small number of PzKpfw III hulls were converted to mount a 15cm *schweres Infanteriegeschütz* (sIG – heavy infantry gun) 33 in a large open superstructure. During spring 1943, all surviving vehicles were attached to PzAbt 201 (23.PzDiv). (Anderson)





Left:
In February 1943, German forces open their attack on Kharkov and Belgorod and would result in one of the last victories for the *Panzerwaffe*. A PzKpfw IV Ausf G from 2.SS-PzDiv Das Reich armed with 7.5cm KwK L/48 provides support for grenadiers during the battle. The long-barrel gun helped German tank forces to regain the advantage over Soviet armour. (Getty)



Above:
The *Flakpanzer* 38 (SdKfz 140) was the first purpose-built German anti-aircraft tank. Mounting a 2cm *Flakvierling* 38 L/55, deliveries of the type began in November 1943 and finished in 1944 after a total of 162 had been completed. (Anderson)

very simple; a 15cm *schweres Infanteriegeschütz* (s IG) 33 heavy infantry gun was mounted in a box-type armoured casemate on the hull of the PzKpfw III. By October/November 1942, a total of 24 units had been built and 12 were issued to *Sturmgeschützabteilung* (StuGAbt) 177 and 244: All were lost in combat. The remaining 12 were delivered to units fighting to break the encirclement of the 6.Army at Stalingrad. In early 1943 it was decided to place all *Sturmpanzer* under the control of the *Panzertruppe*. At that time only seven of the original 24 remained operational, and these were issued to PzAbt 201 (23.PzDiv) fighting in the southern sector of the eastern front.

In April 1943, the first battalion-size *Sturmpanzerabteilung* (StuPzAbt) 216, issued with improved assault tanks built on a PzKpfw IV chassis, was established. A further three units (StuPzAbt 217, 218, and 219) were formed during 1944.

Flakpanzer

The final fighting in North Africa marked a turning point in many respects. For the first time, formations of Allied ground-attack aircraft (*Jagdbomber*) were used to search for and destroy tank formations. German forces proved to be unable to cope with this new situation due to the lack of anti-aircraft weapons in front-line units.

Hardly surprising, the *General der Panzertruppe* demanded the urgent production of anti-aircraft tanks. However, the hard-pressed German armaments industry could not contemplate the mass production of yet another armoured vehicle, but a solution was quickly realized. In November 1943, the *Flakpanzer* 38 was produced by utilizing a modified (engine moved to the front) PzKpfw 38(t) chassis fitted with an open-topped armoured superstructure and mounting a 2cm FlaK 38. These vehicles were issued to *Panzerflakzug* (PzFla-Zug – anti-aircraft tank platoons) and seconded to ten Panzer, *Panzergrenadier* and SS divisions.

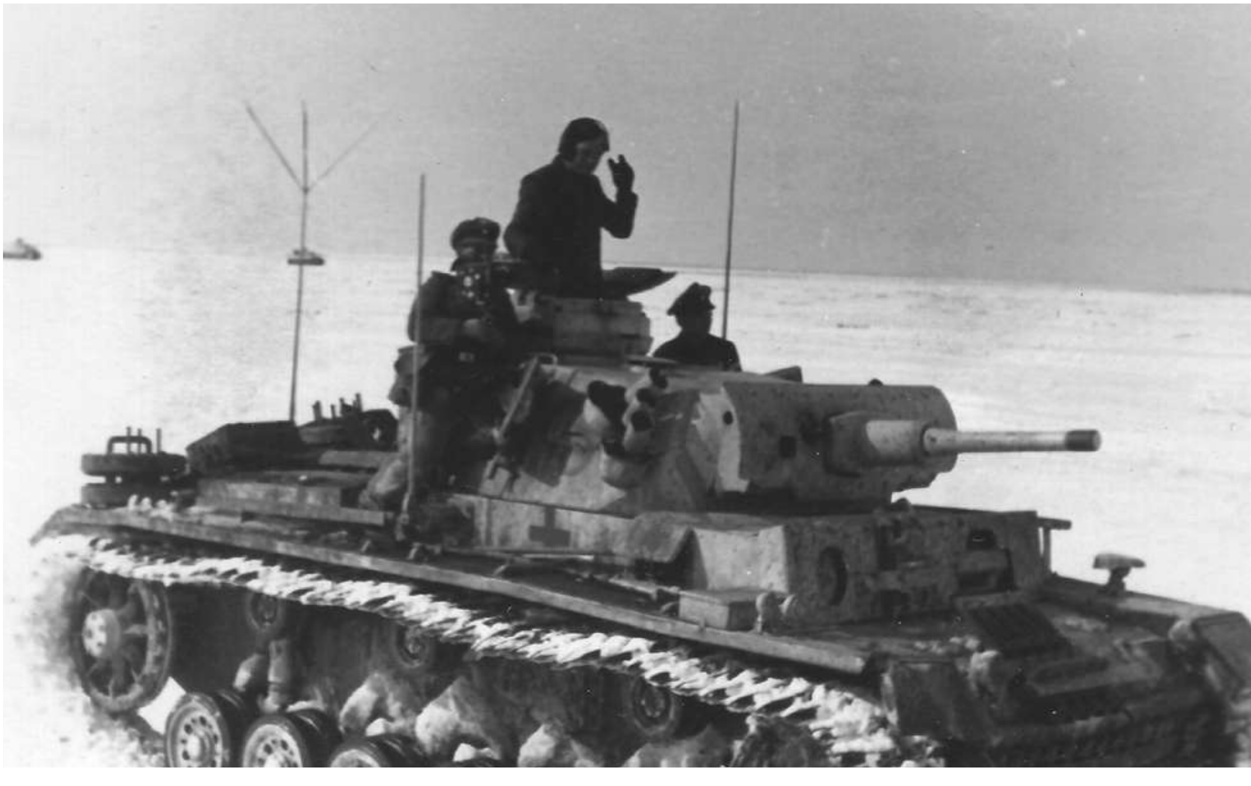
Heavy tank battalions

In late 1942, small numbers of the Tiger became available. The PzKpfw VI Tiger Ausf E had entered production in July/August 1942, but completed vehicles left the assembly line at a very slow rate; by November 1942 only some 20 tanks had been delivered to the first units.

In August 1942, the *Organisationsabteilung* (organizational department) proposed:

> Schedule for the expansion of *Heerestruppen* (army troops)
>
> 1.) Other than meeting current replenishment requirements, the production of *Sonderpanzer* and *Sturmgeschütz* will allow the establishment of the following *Heerestruppen*:

Below: A *Panzerbefehlswagen* III Ausf J (PzBefWg – command tank) from 1.SS-PzDiv Liebstandarte Adolf Hitler armed with a 5cm KwK L/42; note the bow *Maschinengewehr* (MG) 34 has been removed to allow more radio equipment to be carried. Also it is fitted with a *Sternantenne* 'd' (star antenna), a vast improvement over the frame-type antenna and *Winterketten* (winter tracks). (Anderson)



RO

a) Infantry.
b) *Panzertruppe*:
   The establishment of nine Tiger companies; including the six being established for PzAbt 501 and 503.
   Establishment of 16 *Sprengstoffträger Kompanie* B IV, including PzAbt 300: ten of which are to be incorporated in a PzRgt.
c) Artillery:
   Increase of the *Sturmgeschütz Abteilungen* by a further 10 to 12 *Abteilungen*.

The advent of new weapons such as the Tiger called for all current organizational structures to be adapted, in relation to the problem of limited resources. The *schwere Panzerzabteilungen* (heavy tank battalions) were initially integrated on *Heerestruppen* level and deployed, under the orders of *Heeresgruppe* or *Armee* (army group or army high command), to spearhead an attack.

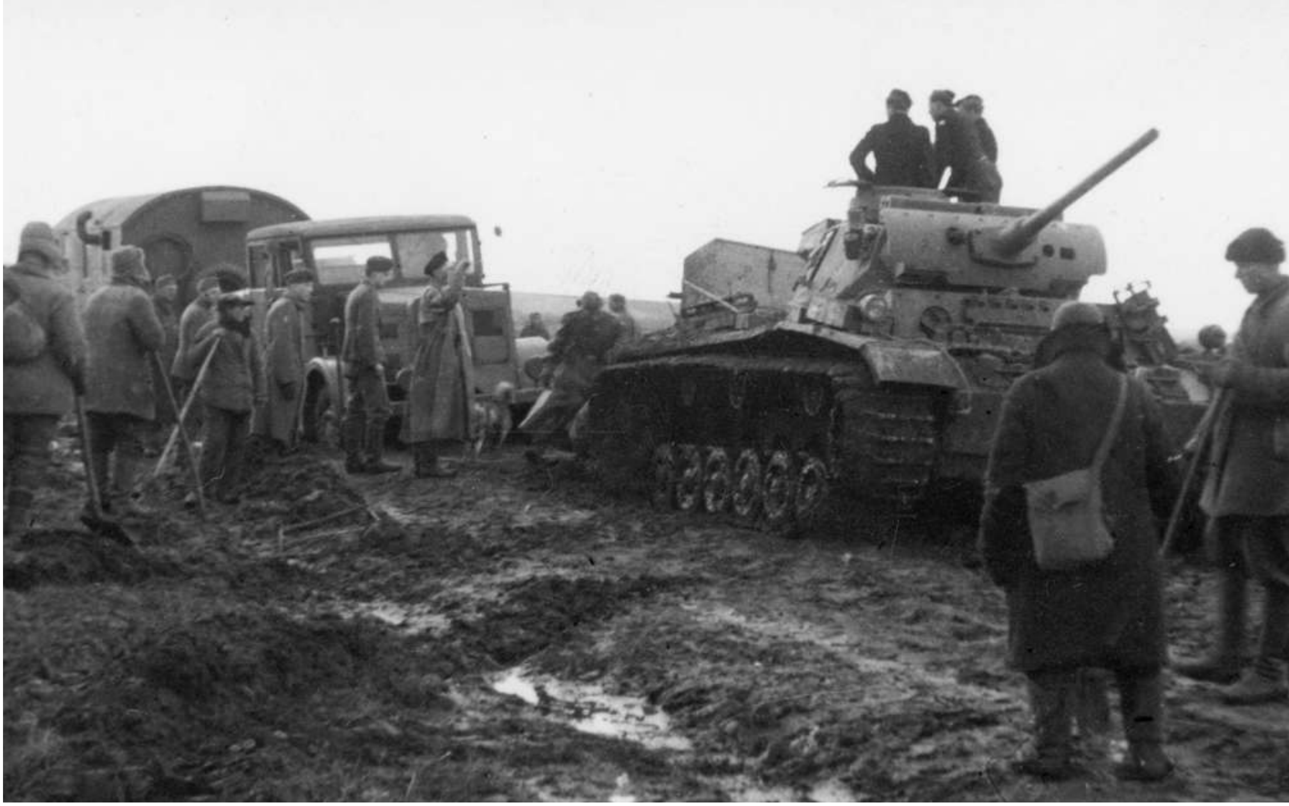
In May 1943, the first Tiger-equipped battalions (s PzAbt 501, 502 and 503) had been established to operate as a combined unit. It is interesting to note that at this time '501' and '503' had been selected for combat in North Africa, and were to be equipped with Porsche-designed PzKpfw VI Tiger (P), which is was thought would be best suited to desert conditions as it had air-cooled engines. However, the Tiger (P) did not enter production.

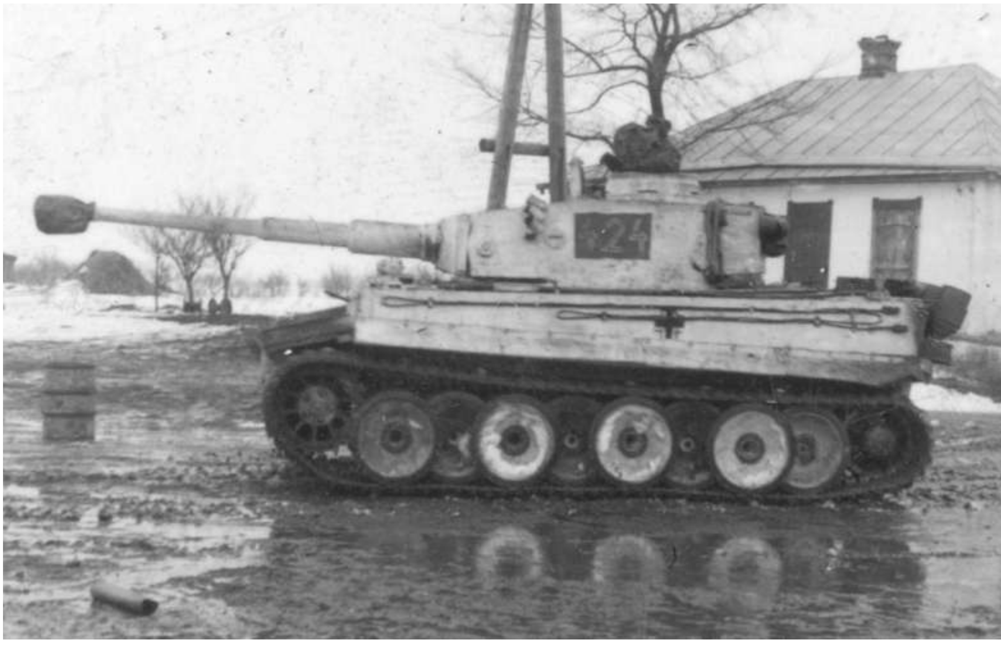
Initially it was planned that each Tiger unit would be equipped with 29 tanks; two in the battalion's staff section, and nine in each of three companies. But this was soon altered by allocating an additional 36 PzKpfw III (5cm (*lang*) or 7.5cm) as a *leichte Panzerzug* (light tank platoon) attached to the staff company and the three companies. The additional tanks were to be used for reconnaissance and liaison duties.

The first Tigers to see action in northern Russia were those of s PzAbt 502, assigned to *Heeresgruppe Nord* (Army Group North) in August 1942. Due to low availability '502' did not reach the planned complement of 29 Tigers and 36 light tanks. The unit first saw action at Leningrad where it deployed just four Tigers, but due to difficult operating conditions three were lost. The war diary of *Organisationsabteilung* reported in a letter dated 19 October 1942:

> Contribution by Group III to the war diary, period 1 to 10 October 1942
>
> 7 October 1942
> Early reports detailing the first combat use of the PzKpfw Tiger on the front at AOK 11 were submitted recently. The first, possibly ill-conceived, assault in which three of the four Tiger tanks were knocked-out, must not lead to the conclusion that the tank is useless. The commander of PzAbt 502, who led

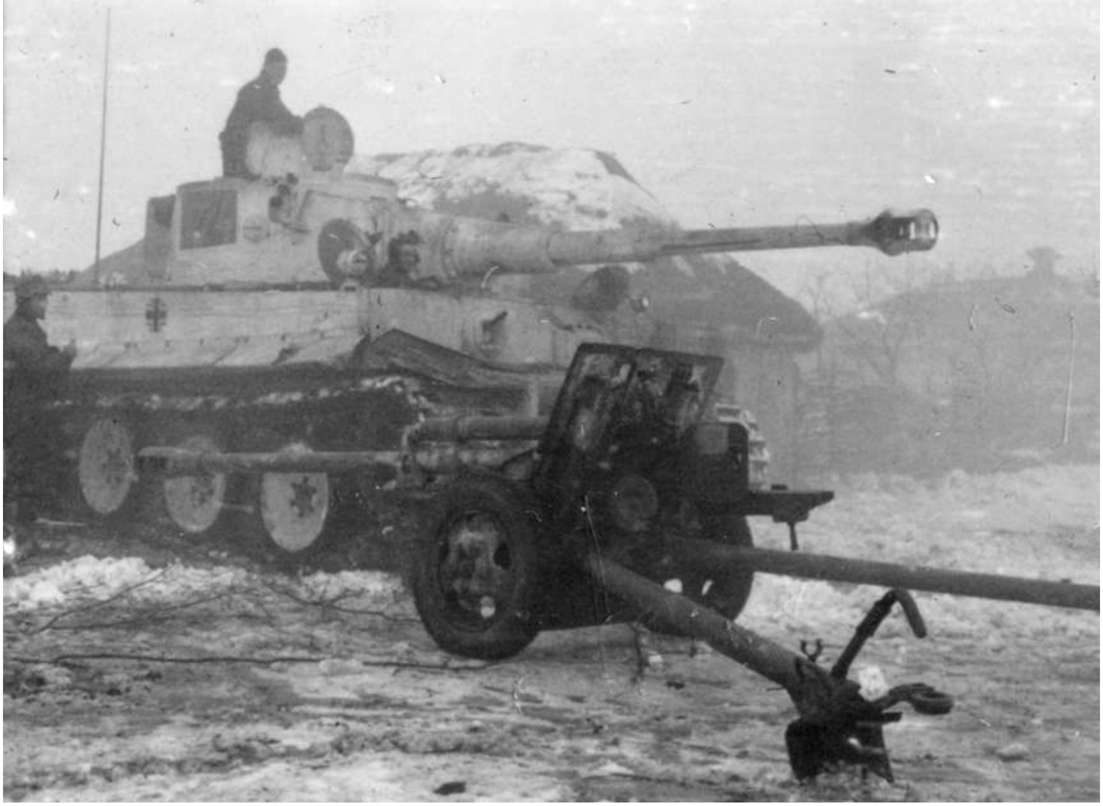
Opposite:
Generaleutnant Johann Mickl, commander of 11.PzDiv, speaks to Major Schimmelmann von Linenburg (commander of 2.Kp/PzRgt 15), from his PzKpfw III *Panzerbefehlswagen* (command tank). By the time the assault on the Kursk salient began, workshop companies had fitted most PzKpfw III with *Panzerschurzen*, to provide extra protection against the Soviet anti-tank rifle. Note that the spare wheel placed between the hull and side skirt would have prevented the turret rotating. (NARA)

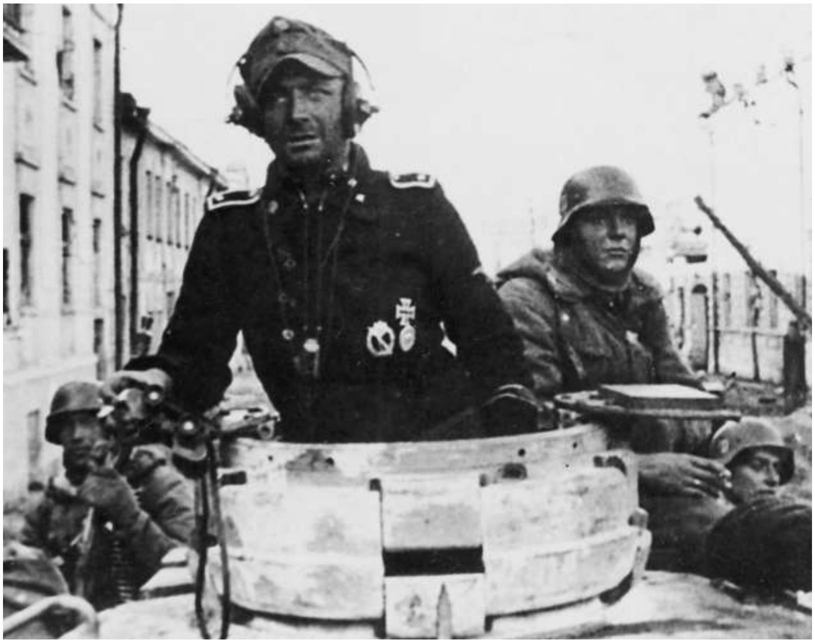




Above:
By spring 1943, the majority of tanks in service with the *Panzerwaffe* were PzKpfw III, armed with the 5cm KwK 39 L/60. A PzKpfw III Ausf M is being used with *Winterketten* (winter tracks), is being used to recover a Hanomag tractor. (Anderson)

Right:
A PzKpfw VI Tiger Ausf E from 1.SS-PzDiv Leibstandarte Adolf Hitler in the spring mud of 1943. Torsion-bar suspension and interleaved road wheels gave excellent cross-country performance, but frozen mud could block the running gear. (NARA)





Above:
A Soviet 76.2mm ZiS-3 divisional gun lies abandoned in front of a PzKpfw VI Tiger Ausf E. The gun entered service in the first months of 1942, and would become the standard anti-tank gun of the Red Army. (NARA)

Left:
On 15 March 1943, 2.SS-Panzerkorps marched into Kharkov thus ending the third battle for the city. An *Oberscharführer*, the commander of a PzKpfw IV from 1.SS-PzDiv wears an Iron Cross 1st Class, a wound badge and (strangely) an infantry assault badge.

Above:
The commander of 2.Kp/s PzAbt 503 (turret number 200) leads his PzKpfw VI Ausf E Tigers slowly through a Russian town during fighting on the Kursk salient. At that time, '503' was authorized to have a complement of 45 tanks. Note all are fitted with smoke-candle dischargers and *Schrapnellmine* (S-mine) launchers. (NARA)

> the assault, reported that mobility and the main gun proved to be better than expected. When deployed in better suited conditions (in this case we had only a very narrow sector to attack, which was effectively controlled by enemy mines and anti-tank weapons), the new tank will perform better. For this reason the next combat deployment will be performed by a company in North Africa. To improve protection, we again demand that the development of sloped armour should be expedited.

Although well-known, this aspect in the history of the Tiger remains of interest as it shows what commanders in the field expected of the new all-conquering tank. After a hard year of fierce fighting, the commanders of tank units at Leningrad certainly knew about tank warfare; when, where and how to commit a tank the size of a Tiger. It is most likely that the order for this first disastrous combat came from the high command, which ignored the expertise of commanders on the frontline.

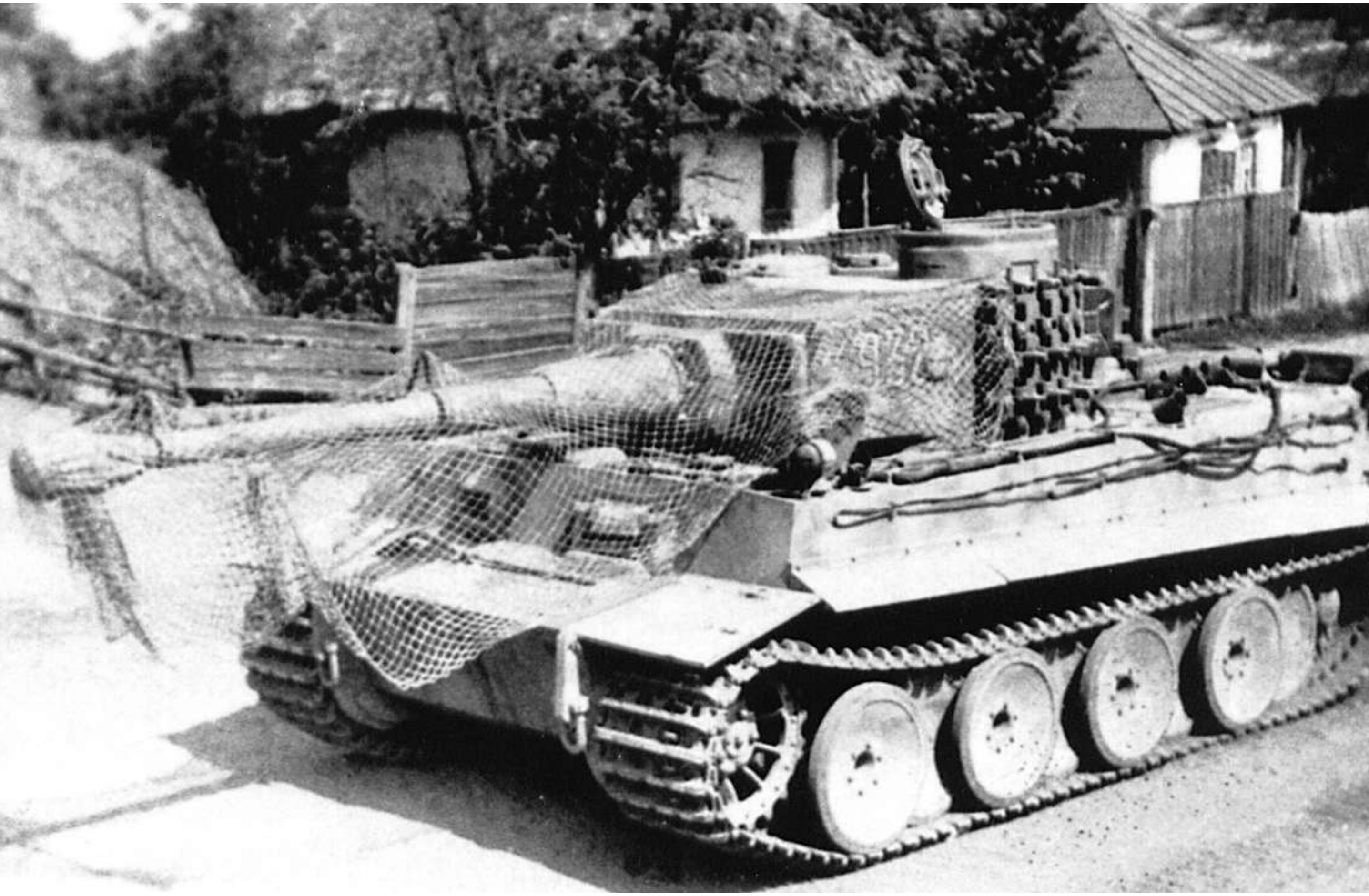
As more Tigers were delivered, all s PzAbt were issued with three s PzKp. In February 1943, the *Generalstab des Heeres* (GenStdH – General Staff of the Army) requested the status of those battalions already established:

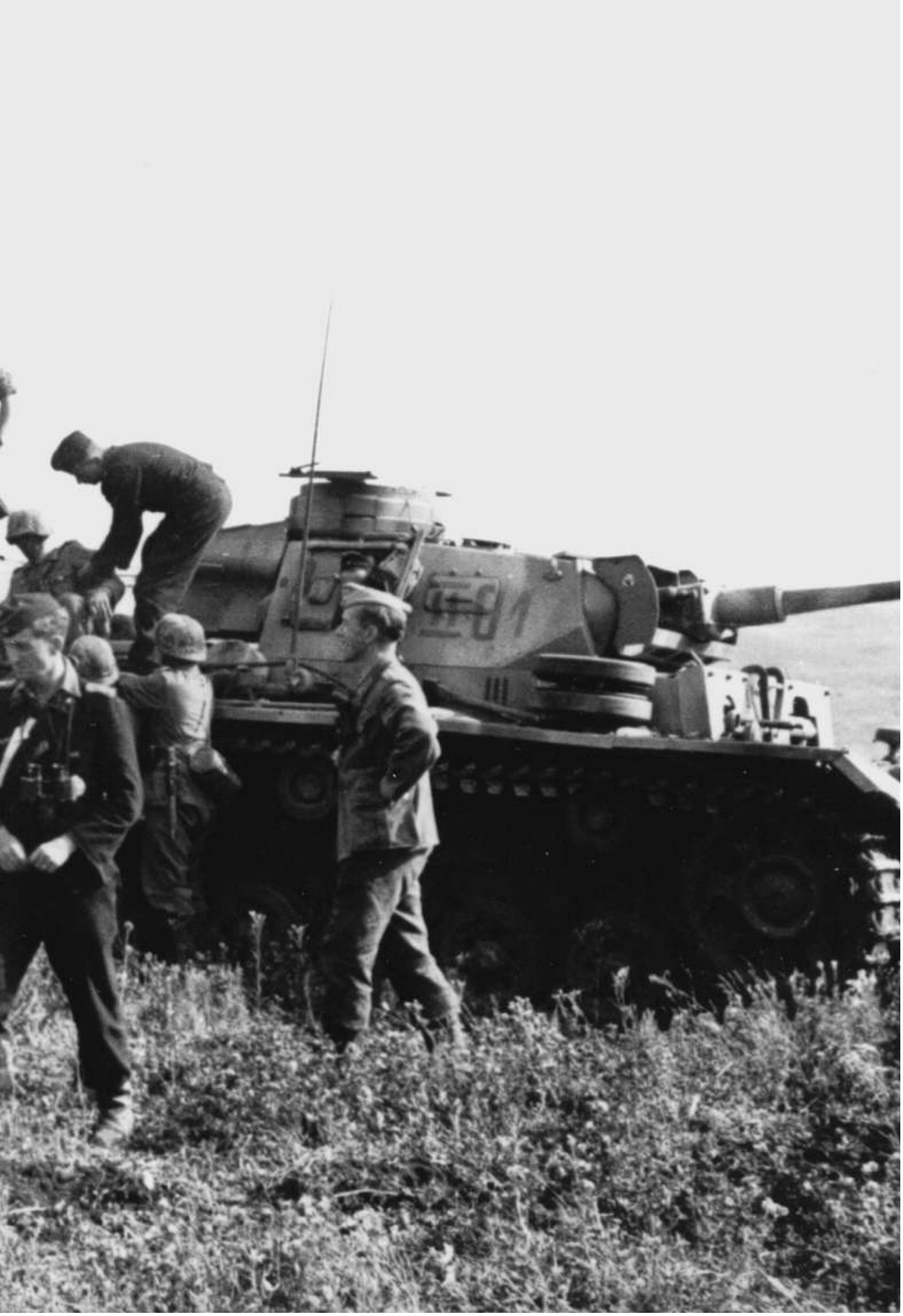
> 1.) GenStdH asks,
>   a) All s PzAbt Tiger to be newly established (including s PzAbt 506) shall be issued with three s PzKp each.

> b) The s PzAbt 504, 501, 505 shall receive one further, s PzAbt 502 two further s PzKp in this sequence. (Urgent: implement before Plan 1a).
>
> 2.) Organization
>
> a) Abt Stab: two PzKpfw VI, light platoon: six PzKpfw IV.
>
> b) *Kompanie*: KpTrupp with two PzKpfw VI, and two platoons each with four PzKpfw VI.
>
> The allotment of *Begleitpanzer* [escort tanks] is cancelled. Those already issued will remain with the respective units, but will not be replaced.

The comments made at Item 2 are a mystery; the allotment of Tigers would have totalled 32 for each battalion, and while the allotment of *Begleitpanzer* was cancelled, a reconnaissance platoon with six PzKpfw IV was to remain with the staff company. It is not known whether this was due to a printing error, it is possible that it should have referred to the

Below:
A PzKpfw VI Tiger Ausf E from 9.Kp/SS-PzRgt 3 of 3.SS-PzDiv Totenkopf has been partially concealed with camouflage netting. The vehicle is not fitted with smoke-candle dischargers, but does have S-mine launchers mounted on the superstructure. (NARA)





Left:
Tank commanders from 11.PzDiv meet to discuss a forthcoming attack. To the left is a *Panzerbefehlswagen* identified by the dummy gun. The PzKpfw III Ausf L to the right is that of the commander of II.*Abteilung*. During the Kursk campaign, German forces attempt to disguise the identity of their units by concealing divisional markings. Note the three black bars of 11.PzDiv painted on the lower part of the turret which can easily be confused with those of 3.SS-PzDiv Totenkopf. (NARA)

Above:
Beside two batteries 10.5cm *leichter Feldhaubitze* (le FH) 18 *Wespe*, the new style Panzer division was to have a battery 15cm *schweres Feldhaubitze* (s FH) 18 *Hummel* (Bumble Bee) in the third battalion of the artillery regiment. These *Selbstfahrlafette* (Sfl – self-propelled [SP]) guns considerably improved the firepower and mobility of a Panzer division. (NARA)

PzKpfw III. This would have resulted in a previously unknown interim organizational structure.

By summer 1943, all s PzAbt were authorized to have 14 Tigers in each company, this was the final solution and remained valid until end of the war (see table). Other than the s PzAbt, some units including (PzRgt Grossdeutschland, SS-PzGrenDiv Leibstandarte Adolf Hitler, and SS-PzGrenDiv Das Reich) received a Tiger-equipped s PzKp as an integral detachment.

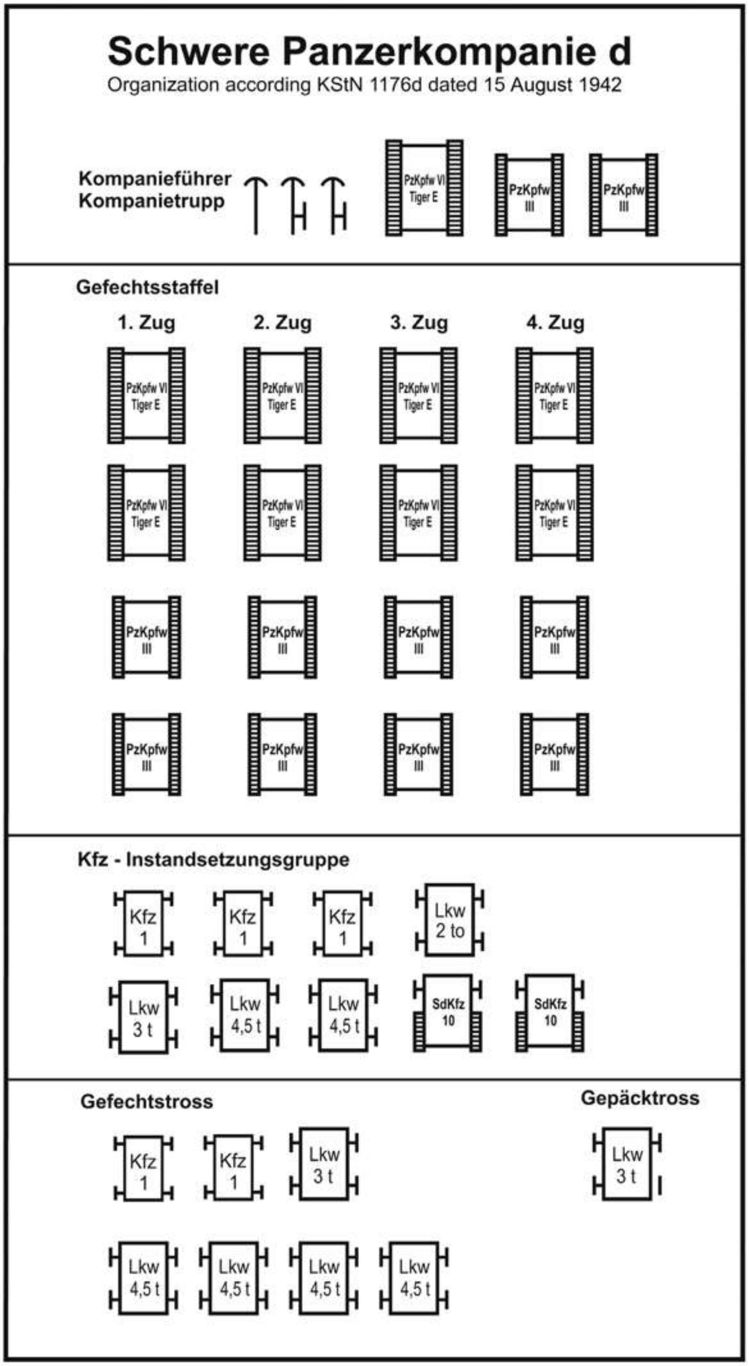
Sturmgeschütz in the *Panzertruppe*

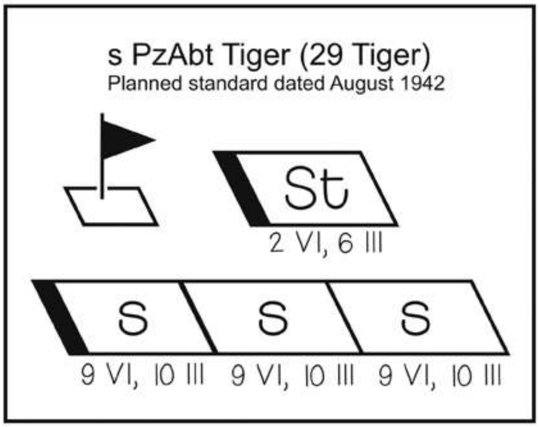
Between March and April 1943, the *Generalinspekteur der Panzertruppe* decided:

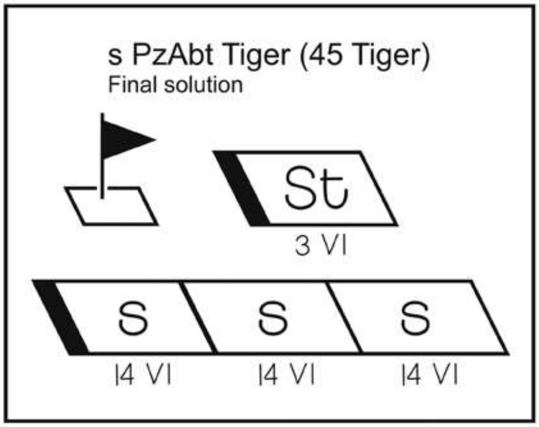
> 1.) During the transition period a number of *Panzerdivisions* will be provided with one *Panzer-Sturmgeschützabteilung* in their *Panzerregiment* as an interim solution.
> 2.) Each will be issued with 96 *Sturmgeschütz*.

Three Panzer divisions (14.PzDiv, 16.PzDiv and 24.PzDiv) had been lost by the time Soviet forces recaptured Stalingrad. German industry did not have

Heavy Tank Company ‘d’


Schwere Panzerkompanie d
Organization according KStN 1176d dated 15 August 1942
Kompanieführer
Kompanietrupp
PzKpfw VI Tiger E
PzKpfw III
PzKpfw III
Gefechtsstaffel
1. Zug
2. Zug
3. Zug
4. Zug
PzKpfw VI Tiger E
PzKpfw VI Tiger E
PzKpfw VI Tiger E
PzKpfw VI Tiger E
PzKpfw VI Tiger E
PzKpfw VI Tiger E
PzKpfw VI Tiger E
PzKpfw VI Tiger E
PzKpfw III
PzKpfw III
PzKpfw III
PzKpfw III
PzKpfw III
PzKpfw III
PzKpfw III
PzKpfw III
Kfz - Instandsetzungsgruppe
Kfz 1
Kfz 1
Kfz 1
Lkw 2 to
Lkw 3 t
Lkw 4,5 t
Lkw 4,5 t
SdKfz 10
SdKfz 10
Gefechtstross
Kfz 1
Kfz 1
Lkw 3 t
Lkw 4,5 t
Lkw 4,5 t
Lkw 4,5 t
Lkw 4,5 t
Gepäcktross
Lkw 3 t





the capacity to make up these losses and continue to supply tanks for other front-line units; a further increase in tank production was not possible. A solution to the problem was to utilize facilities producing *Sturmgeschütz*, which affected supplies to *Sturmartillerie* units.

While the conversion of PzDiv 43 was slowly proceeding, a new interim organizational structure was published: *Panzerdivision mit Panzer-Regiment* 43 noted that two tank battalions were equipped with PzKpfw IV and PzKpfw V. A further battalion included a *Panzer-Sturmgeschützabteilung* (PzStuGAbt) with 96 *Sturmgeschütz*. However, this PzStuGAbt was designated as a *Panzerjägerabteilung* (tank hunter battalion). It is interesting to note that the regimental staff company was equipped with two or three demolition carrier platoons and a *Flammpanzer* platoon. This structure also anticipates the later formation of PzDiv 44.

To the knowledge of the author, no unit was ever equipped to this ambitious standard.

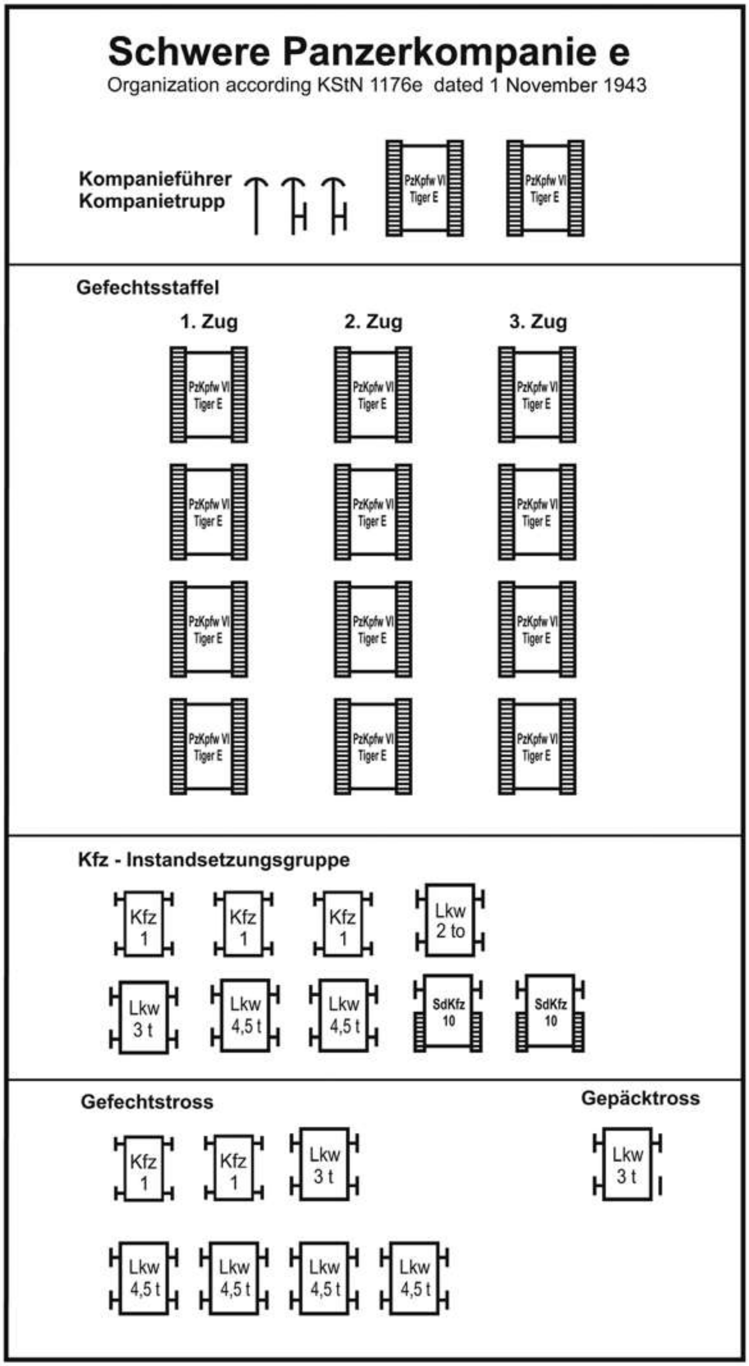
PzStuGAbt were also used to increase the fighting ability of a *Panzergrenadierdivision* (PzGrenDiv), but with a reduced number (14) of *Sturmgeschütz* in each company.

Recapture of Kharkov

In February 1943, by making best use of the forces left after the loss of Stalingrad, *Generalfeldmarschall* Erich von Manstein ordered a surprise attack on Kharkov; the third battle for Kharkov. Elements of the SS-*Panzerkorps*, 1.SS Leibstandarte Adolf Hitler and 2.SS Das Reich and other units launched their attack against far superior Soviet forces.

After fierce fighting, the city was captured once again by German forces. Some days later Belgorod was also captured. These surprise victories halted the collapse of the entire southern front, which could have led to an even greater disaster than Stalingrad. Once again the superior tactical knowledge of

Heavy Tank Company ‘e’


Schwere Panzerkompanie e
Organization according KStN 1176e dated 1 November 1943
Kompanieführer
Kompanietrupp
PzKpfw VI Tiger E
PzKpfw VI Tiger E
Gefechtsstaffel
1. Zug
2. Zug
3. Zug
PzKpfw VI Tiger E
Kfz - Instandsetzungsgruppe
Kfz 1
Kfz 1
Kfz 1
Lkw 2 to
Lkw 3 t
Lkw 4,5 t
Lkw 4,5 t
SdKfz 10
SdKfz 10
Gefechtstross
Kfz 1
Kfz 1
Lkw 3 t
Lkw 4,5 t
Lkw 4,5 t
Lkw 4,5 t
Lkw 4,5 t
Gepäcktross
Lkw 3 t

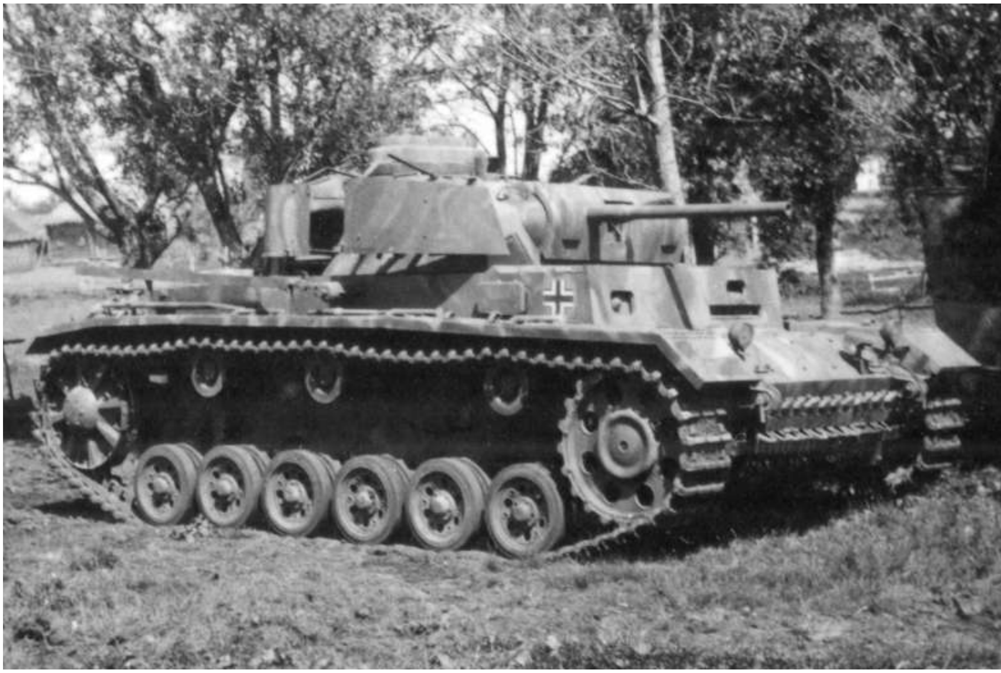
German commanders had won the day which left the Soviets with a significant number of troops lost.

The PzRgt Grossdeutschland advanced to Belgorod from north. The unit had its own permanent heavy tank detachment; not a regular practice. Also it had been supplied with large number of *Flammpanzer* III. The StuGAbt, which was an integral part of *Infanteriedivision* Grossdeutschland, is not shown in this table.

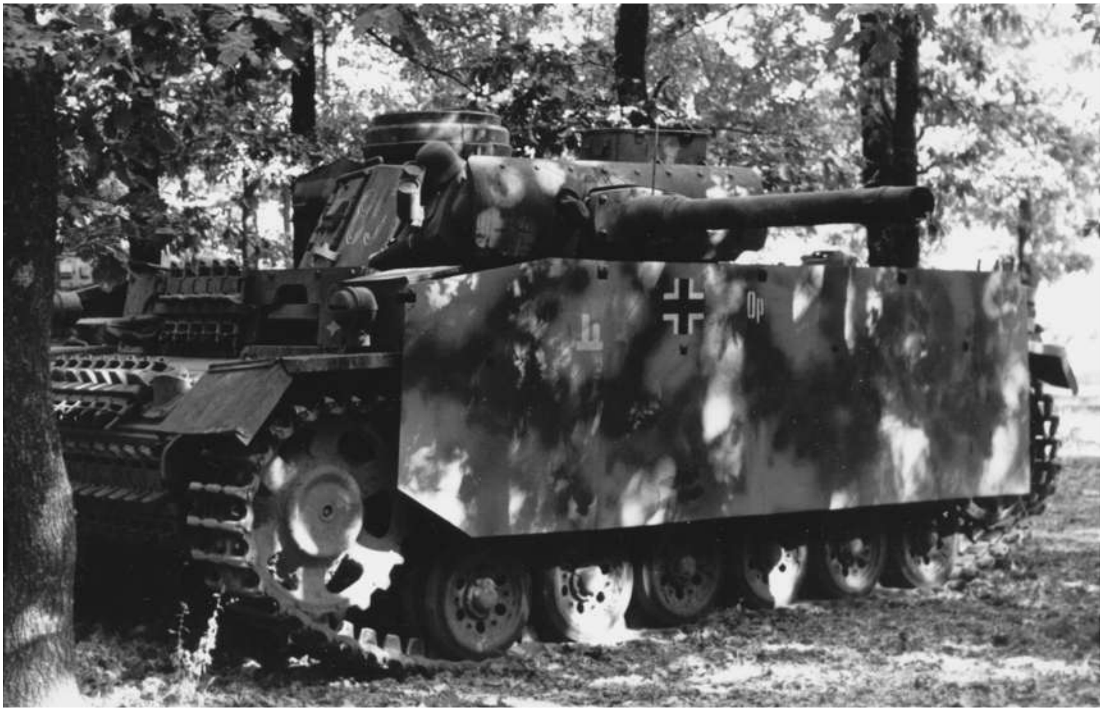
PzRgt 'GD' 18 March 1943	Pz III (Flamm)	Pz III (lang)	Pz IV (kurz)	PzIV (lang)	PzBeflswg	Tiger (H)
Combat ready	26	12	2	61	6	4
Workshop		1	2	6	1	5
Assigned supply	2			15		

PzRgt Grossdeutschland reported from the commitment by 18 March 1943:

> After Action report regarding the Panzer VI Tiger
>
> Period of commitment: 7 March to 19 March1943
> Area: Poltava – Belgorod
>
> The recent commitments have made great demands on the Panzer VI. The Tiger *Kompanie* is, beside the other *Abteilungen*, an independent unit. Due to the heavy armour and effective ordnance of the nine Tigers the unit was



Right:
To provide the forward artillery observers with *Panzerbeobachtungswagen* (armoured observation tanks), a number of PzKpfw III were modified and fitted with additional radio and observation equipment. A dummy main gun was fitted, but the *Maschinengewehr* (MG) 34 was retained for close defence. (Hoppe)



Above:
Among the *Sonderpanzer* (special purpose tanks) developed for PzDiv 43, the *Flammpanzer* (flame-thrower tanks) was considered to be vital. In February 1943, delivery of *Flammpanzer* III tanks to staff companies began in the Panzer regiments. The vehicle shown was on the strength of 6.PzDiv; the letters 'Op' refer to the name of the divisional commander. (NARA)

> always used in the leading echelon of an attack. It was even necessary to use a single Tiger for reconnaissance. This resulted in heavy wear and tear, as the tanks had to be used for long periods without any maintenance including oil changes. During the day the tanks were in combat, at night they were used on guard duties… After five or six days the first Tiger failed… Most damage was to the running gears. The [Maybach] Olvar pre-selector gearbox and the engines proved to be very reliable… Due to its complexity, we consider the assignment of a second company of Tigers as urgent.
>
> Recent commitments have revealed that the Pz III *Begleitpanzer* cannot be used to protect the Tigers; the enemy will quickly recognize and destroy the light tanks. Thus the unit should be considered as unique… Tiger units should only have Tiger tanks.

A Tiger crew was filled with confidence in their extremely well-armoured and powerfully armed tank, but the large number of kills claimed was often considerably overestimated. From a further report from the high command of *Heeresgruppe Süd*:

> Experiences from the combat by our Panzers
>
> InfDiv Grossdeutschland reports on successes after the tank-versus-tank combat during the winter battle at Kharkov:

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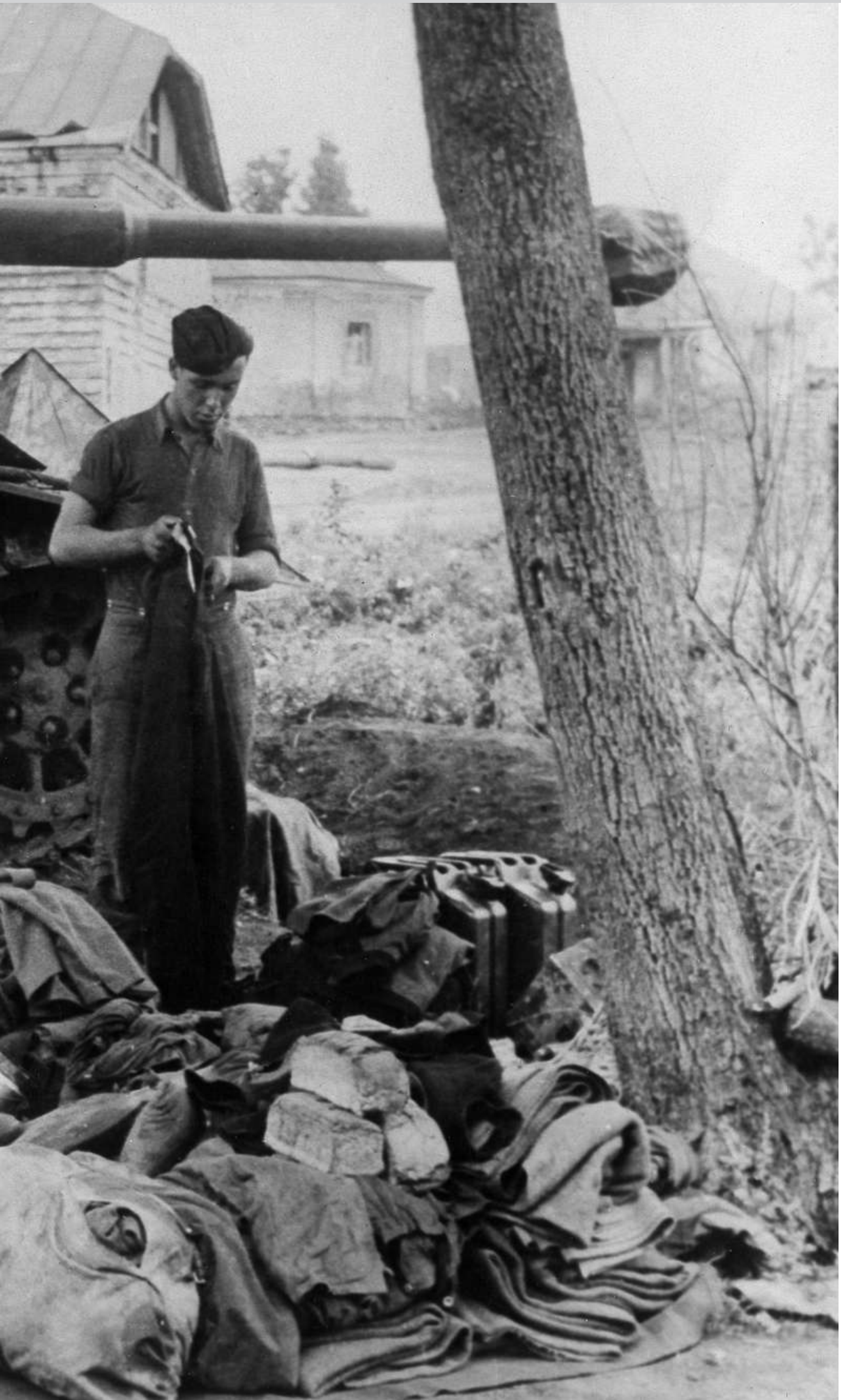
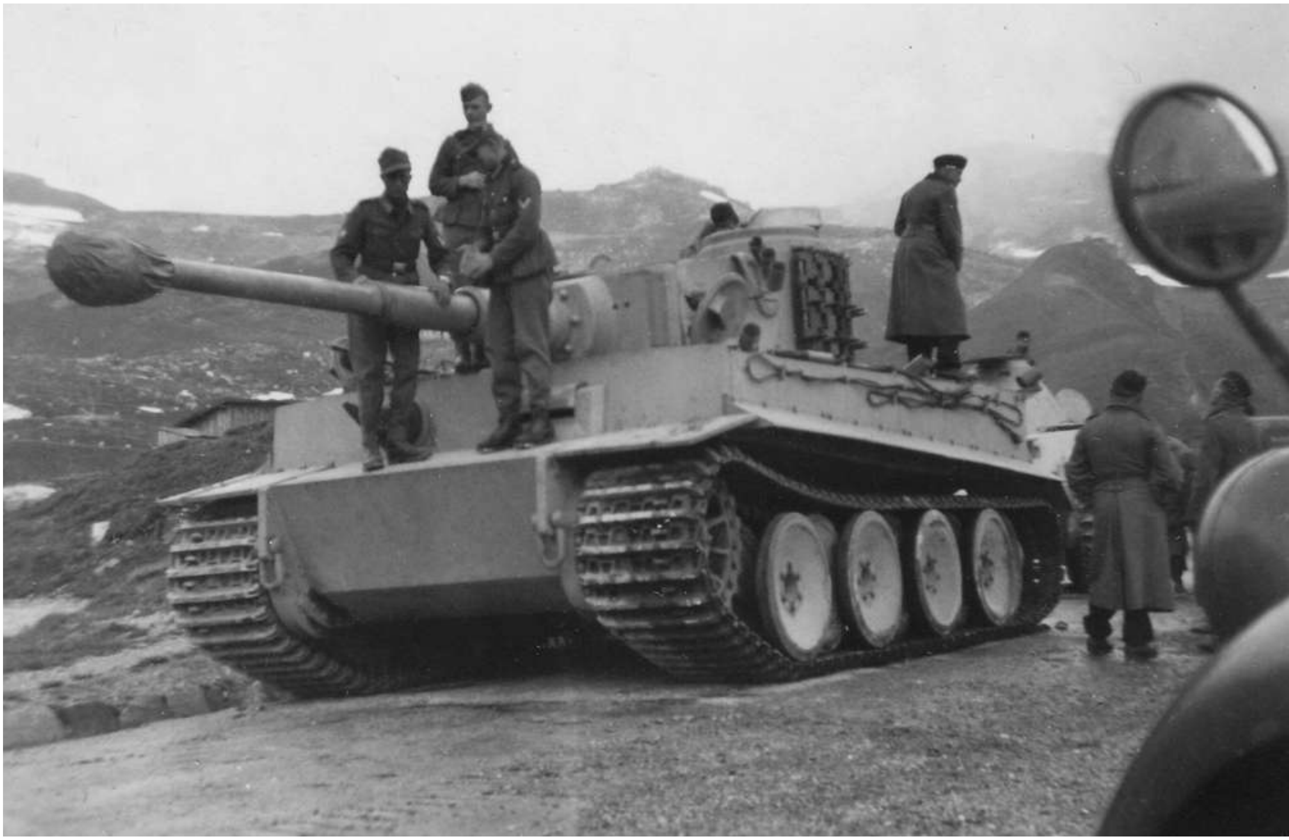
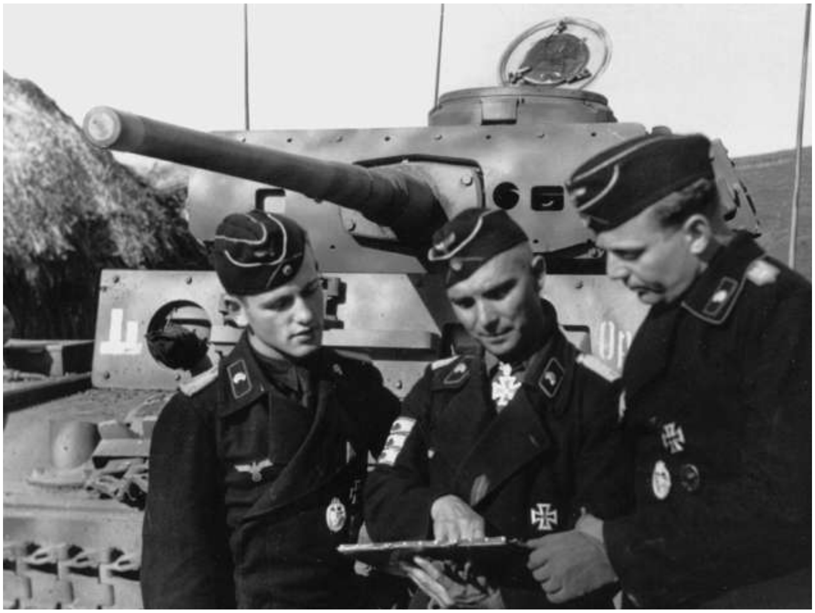


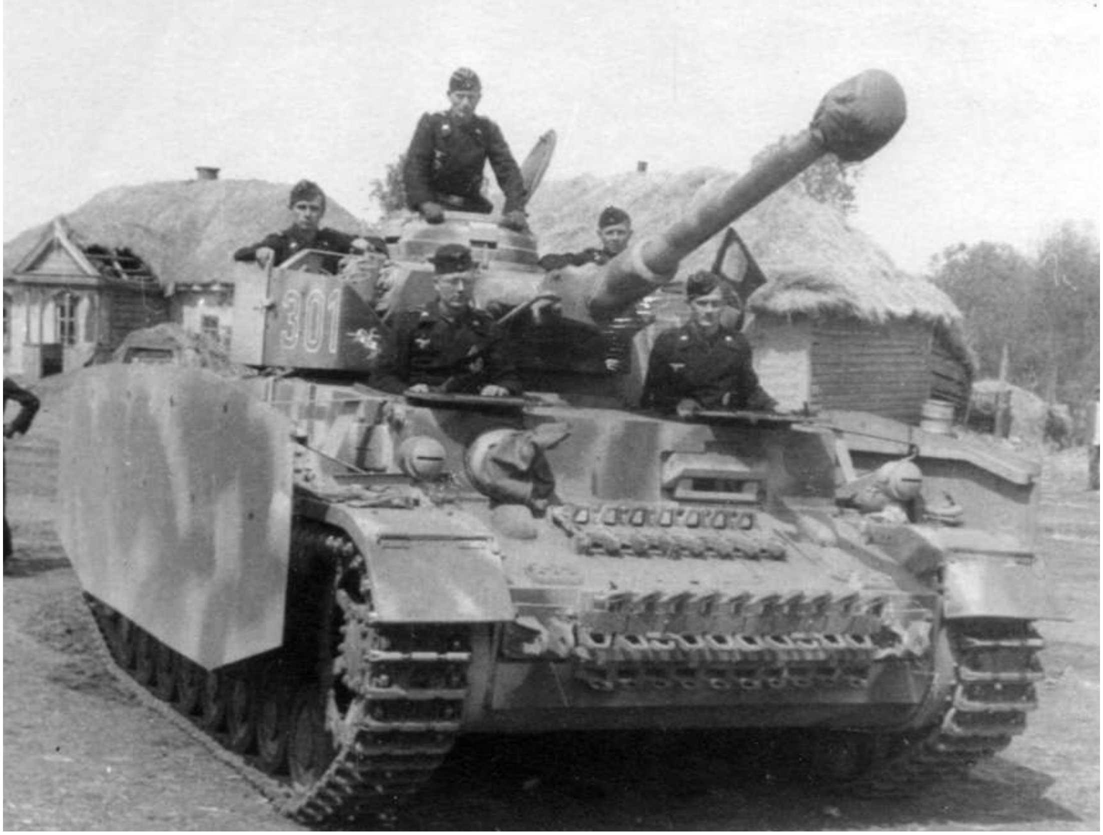
Left:
The crew of a PzKpfw VI Tiger Ausf E from s PzAbt 505 load their tank with personal effects, food and other equipment in preparation for deployment to the battlefront. (Getty)



Above:
An early production PzKpfw VI Tiger Ausf E on road-running trials in the Grossglockner region of Austria; note the tank is fitted with S-mine launchers. (Anderson)

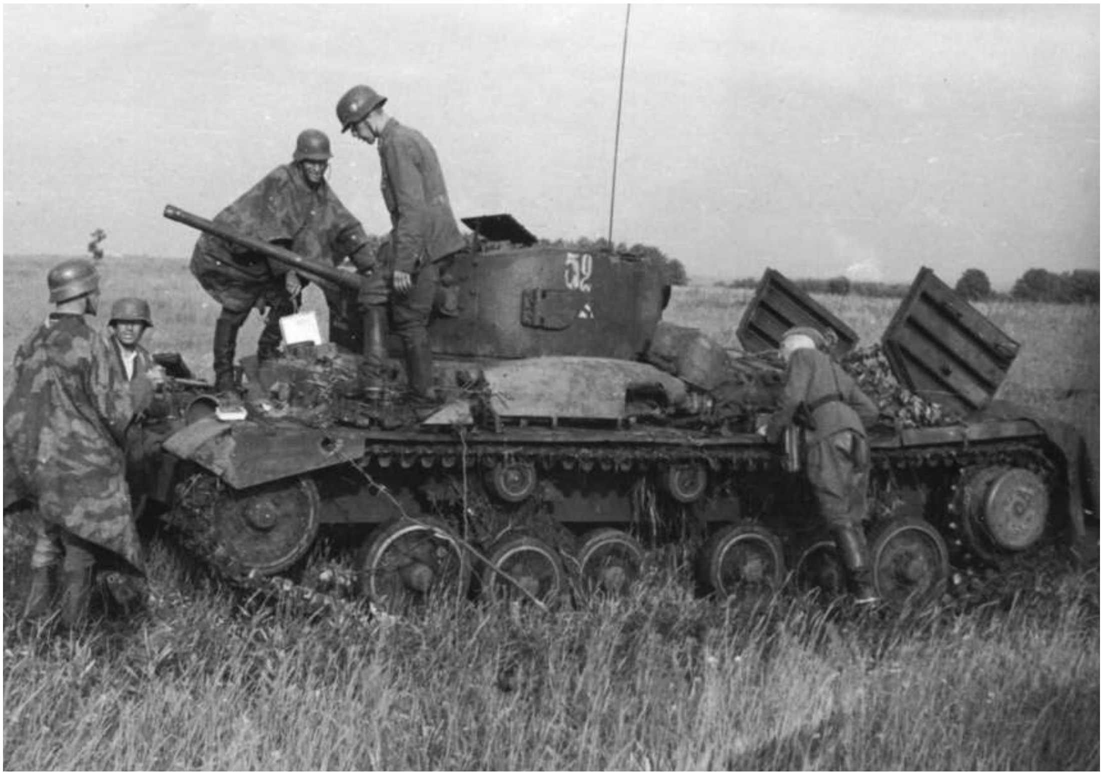


Right:
A *Panzerbefehlswagen* (command tank) from the staff section of PzRgt 11 (6.PzDiv); the PzBefWg III Ausf J was fitted with an Ausf L turret and mounted a 5cm KwK. Far right is Oberst Hermann von Oppeln-Bronikowski, commander of the unit. (NARA)



Above:
This PzKfw IV Ausf G, from an April 1943 production batch, was delivered with *Panzerschürzen*. The tank could possibly be from PzRgt 33 (9.PzDiv), which had a charging knight (Prinz Eugen) as an emblem. However, s PzAbt 505 used a similar design and documentary evidence suggests that its light platoons were equipped with PzKpfw IV. (Hoppe)

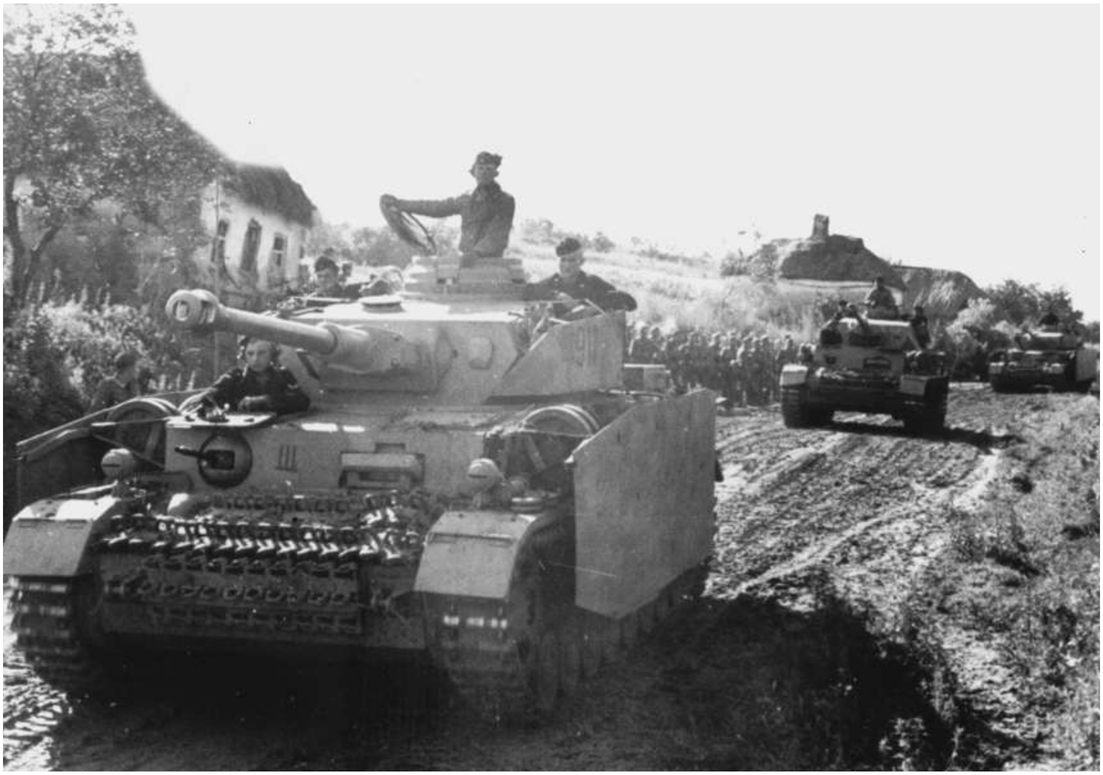
1.) From 7 March to 20 March 1943 the following tanks were destroyed:
    250 T-34
    16 T-60 and T-70
    Three KV-1
2.) The kills were achieved as follows:
    188 by Panzer IV (lang)
    41 by Sturmgeschütz 7.5cm (lang)
    30 by Panzer VI
    Four by 7.5cm PaK (towed)
    Four by 7.5cm PaK (Sfl)
    One direct hit by sIG 33
    One by hollow charge
3.) A decrease in the quality of the Russian tank was not observed.
4.) The quality of the enemy's leadership, although an officer is present in every tank, was without exception poor. The skill of their tank crews has deteriorated significantly. Training seems to take place at the production facilities. The accuracy of stationary enemy tanks is good. Their wireless equipment seems to be much better [US-supplied radios]. Whenever a



Above:
German soldiers inspect a British-built Infantry Tank, Mk III, Valentine III supplied to the Soviet army as part of the military aid programme. By 1943 standards, this tank was considered obsolete due to the ineffective performance of the Ordnance QF 2-Pounder gun. (Anderson)

> Tiger appears their tank crews panic. The Russian does not appear able to organize attacks with massed tank forces. He normally advances with four to nine tanks repeatedly using the same tracks. More tanks will be forced into combat by transmitting false radio messages that appear to boost their morale.
>
> During an attack, it is of utmost importance to provoke the enemy tanks into becoming mobile: The Tigers are perfectly suited to this, as when his flanks are revealed, it is simple to destroy his tanks.
>
> In general, the Russian tank carries some 100 rounds (75 HE and 25 HVAP)… Their armour-piercing round will penetrate our armour and disperse in the interior, severely wounding all five crew members.
>
> Our own HVAP rounds [PzGr 39,] are very effective and have outstanding accuracy. In contrast, the HL/B round [hollow charge] can be used only at ranges up to 500m. When a HL/B round hits the target the effect is good, but a large amount of ammunition has to be fired. The troop has no confidence in these rounds and requests an increased supply of HVAP.

Other reports had to admit that the Soviet tank troops were able to improve their skills or adapt their tactics. However, the majority still dutifully followed

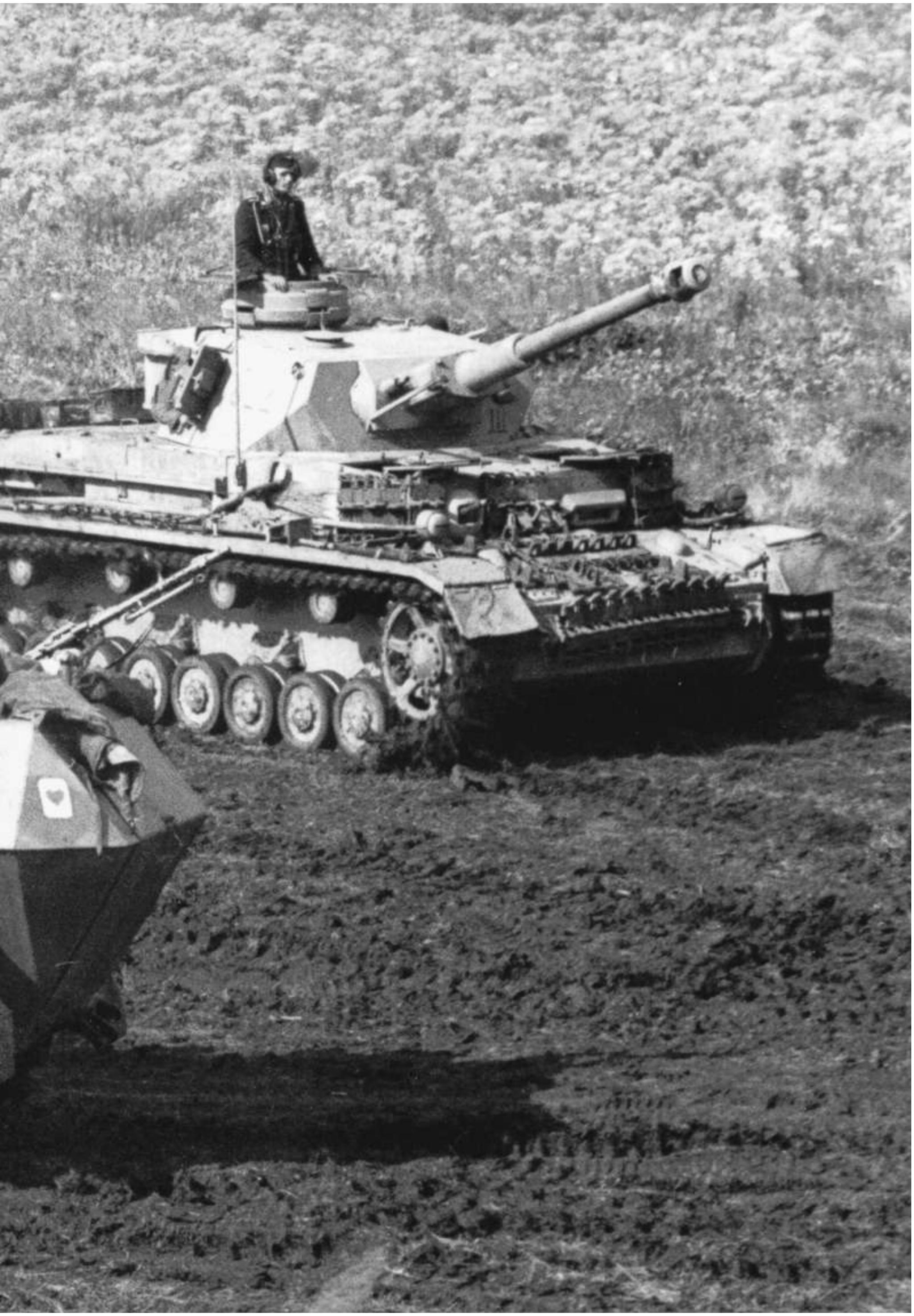


Above:
When Operation Citadel was launched, PzRgt 15 (11.PzDiv) had 25 Panzer IV (lang). The unit used a temporary marking, visible in the centre of the glacis plate. The turret number is a mystery, as at that time PzRgt 15 had only six companies. (NARA)

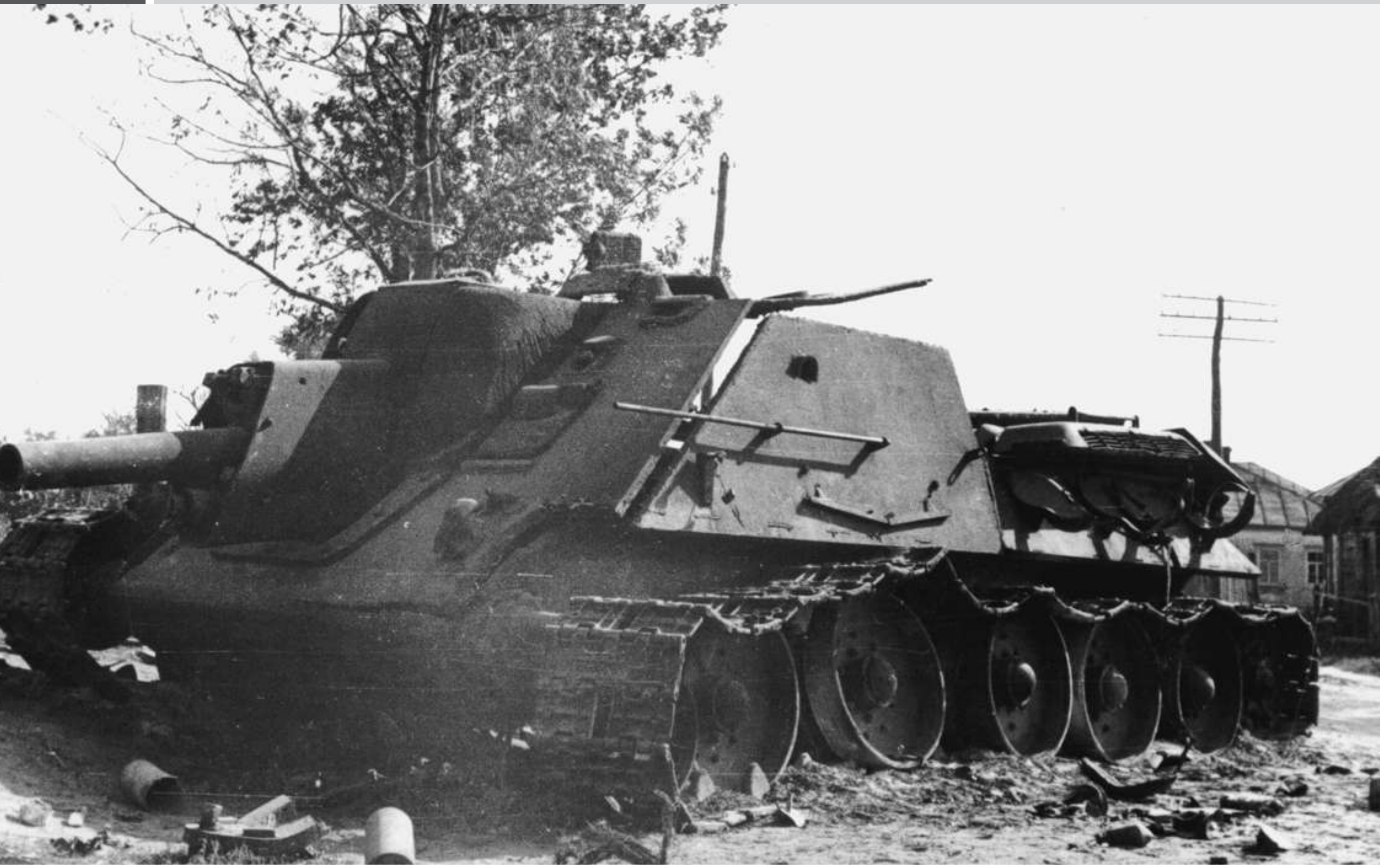
orders and did not use any individual initiative. Aware of these shortcomings the Soviets decided to play safe; when threatened by a massed assault, they reinforced their defensive lines to an incredible extent.

After the defeat at Stalingrad, *Generalleutnant* Wilhelm Crisolli, the commander of 13.PzDiv summarized his experiences regarding the quality of German tank tactics:

> Questions and answers:
>
> 1.) How can the enemy's increasing anti-tank defences be neutralized during an attack?
>
> The *Panzertaktik*, which has led to many great victories over the years 1939, 1940 and 1941, must be regarded as being outdated. Even if it is still possible to break through a defensive line using a massed attack by tanks in several subsequent waves, we cannot afford this method due to our present production output. Such an attack, repeated several times will lead to a rapid decrease in the effectiveness of a tank unit, and consequently the combat value of a *Panzerdivision*.
>
> A change to the *Panzertaktik* is necessary. The initial success of our new



Left:
Tanks of PzRgt 15 (11. PzDiv) pass a *mittlere Schützenpanzerwagen* (m SPW) SdKfz 251/1 from PzGrenRgt 110, one of the armoured rifle regiments in the division. The temporary marking used by the unit during the Kursk campaign is barely visible to the right of the gun shield. Both PzKpfw IV Ausf G have not been fitted with *Panzerschürzen* despite strenuous efforts to supply all units as an 'in the field' modification. (Anderson)



Above:
By 1943, the Soviets made a major effort to produce weapons able to defeat the PzKpfw VI Tiger Ausf E: The SU-122 was one. The type had a 122mm M-30S howitzer mounted in a casemate-type superstructure on the chassis of the proven T-34. The vehicle was to provide attacking forces with effective flat-trajectory high-explosive (HE) fire. Also it could fire armour-piercing (AP) rounds capable of defeating a heavy tank. (Anderson)

weapons, which are technically advanced and at present invulnerable, will in time become vulnerable as new types of defence weapons are developed. Seen from the production angle, it is simpler to manufacture an anti-tank weapon than it is a tank. For every tank there will be thousands of anti-tank rifles and vast numbers of anti-tank guns.

We have to draw the right conclusions and make the correct decisions.

2.) Which conclusions have to be drawn in respect of Panzer tactics?

The new *Panzertaktik*, which has proved successful in the current massive tank engagements of *Panzerdivisions*, will be explained in the following.

A tank group, supported by all other weapons as more or less an auxiliary weapon, is no longer the core of the *Panzerdivision*. The tank is now a new weapon working in cooperation with the old weapons. Working together with the other weapons the tank will always be valued even if the numbers have fallen below the target figure.

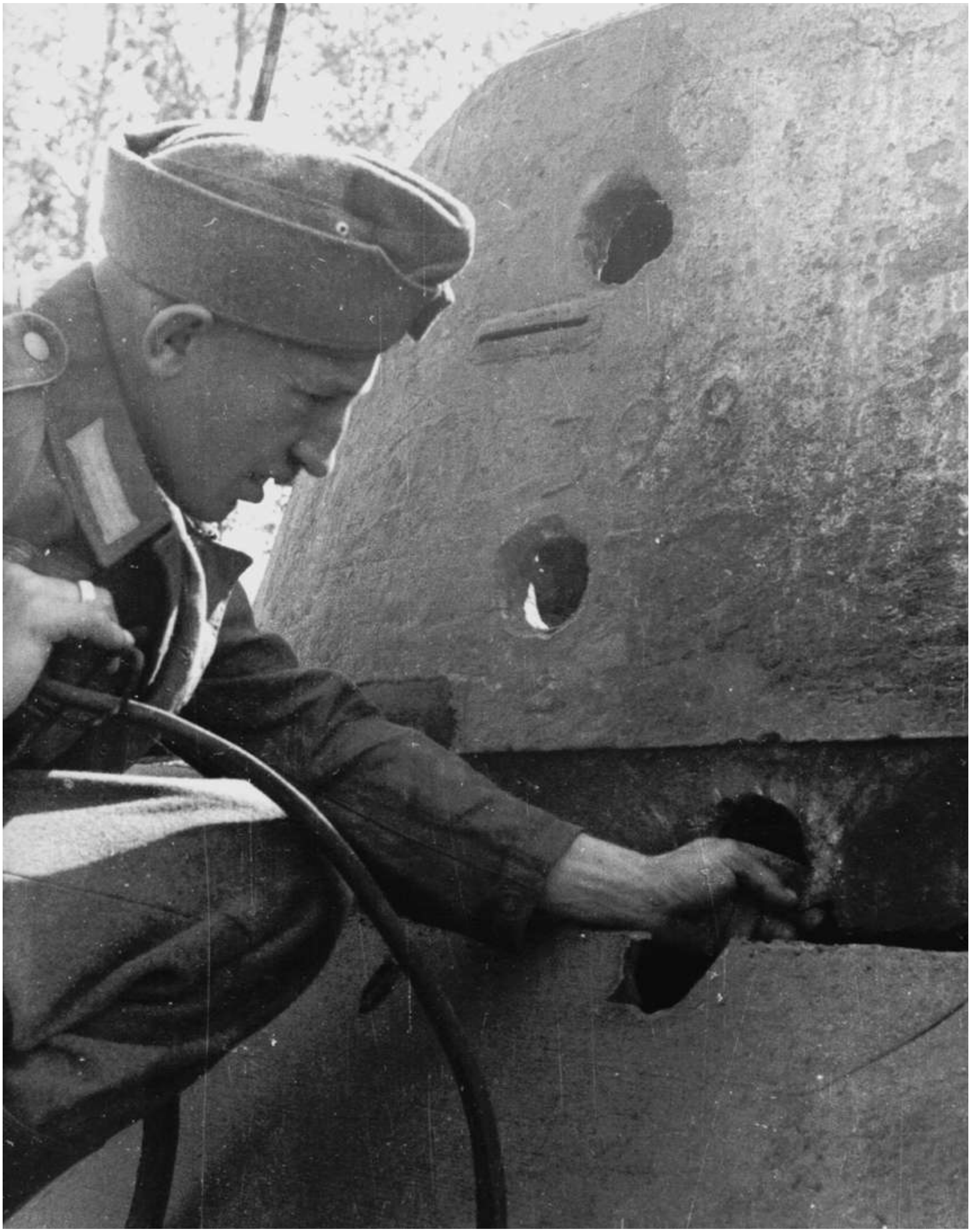
This importance is based on the fact that the tank combines the two elements essential for an attack; mobility and firepower. For this reason, the tank is the

Above:
Officers of PzRgt 25 (7.PzDiv) plan their next move on the battlefront.
A *Panzerbefehlswagen* (PzBefWg – command tank) III Ausf J from the I. *Abteilung* staff is in the background. (Anderson)

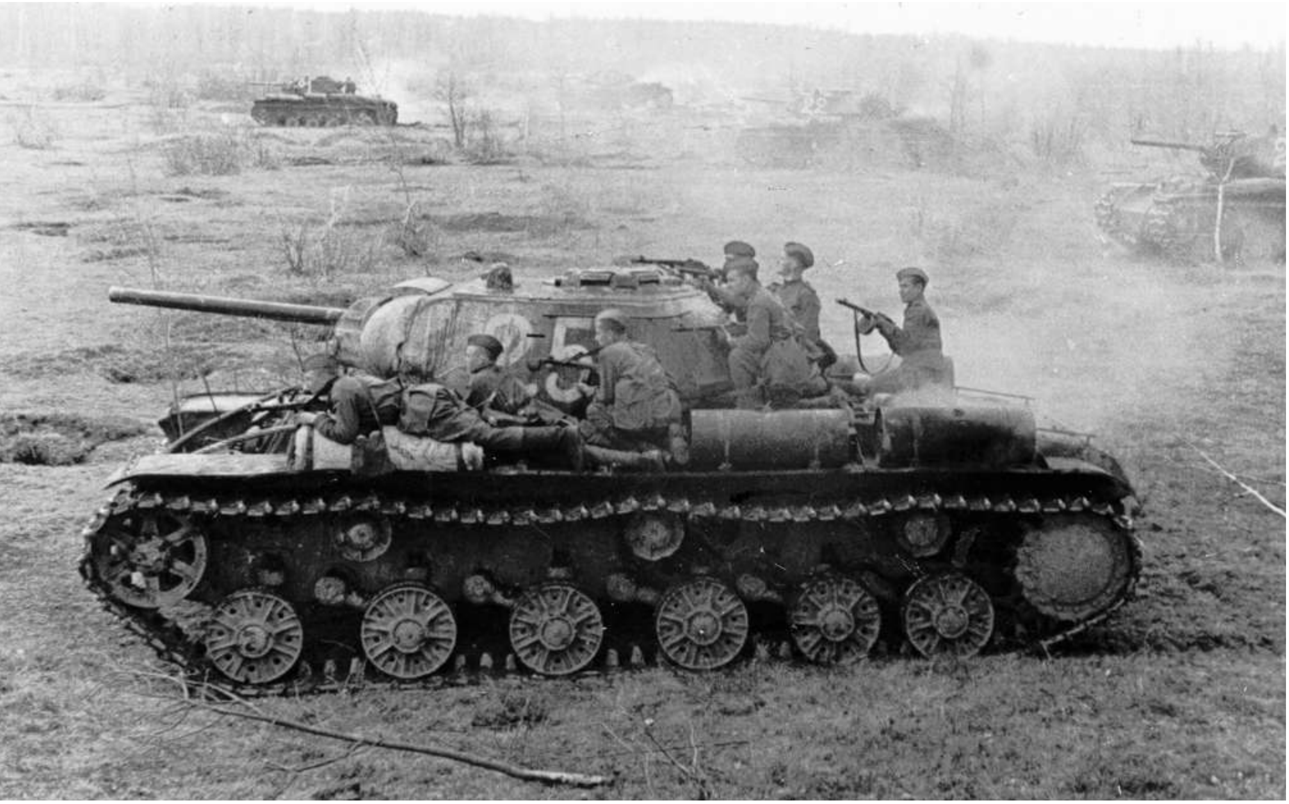
> best weapon at the point main effort. During such an action, armour protection is of secondary importance.
>
> Combat by the *Panzerdivision* is characterized by the high mobility all of its elements. The leadership can select or create the main point of effort during the battle, but excludes any rigid approach planned before the battle. Any action which has been planned in advance can only be altered, on the direct orders of the *Panzerdivision* commander, during the deployment if a more suitable place is located for the attack.

This summary by Crisolli seems to be far ahead of the then current German tank doctrine. However, his opinions are deceiving. German military authorities clearly understood the challenges, but were hindered by the lack of equipment for them to be implemented. One answer was to develop new, superior weapons; the other would be to incorporate them in new organizational structures such as the PzDv 43 (with PzRgt 43).

Crisolli demanded to align the tanks with other elements of the division. However, the mobility and speed of the tank could not be matched by these other elements.



Above: The T-34/76D Model 1943 was fitted with a larger cast armour turret which allowed space for three crewmen. However, this turret has received three hits from 7.5 or 8.8cm armour-piercing (AP) rounds all of which have penetrated. (Anderson)



Above:
From the start of the Russian campaign, the Soviet-built KV was a well-armed heavy tank which was greatly respected by German tank crews. In 1943, the KV-1S entered service, and although the new version was fitted with a larger turret it was slightly smaller, lighter and more manoeuvrable. At first the type was armed with the 76.2mm F-34, but the larger turret had room to mount the 85mm D-5T gun. The KV-1S was the first Soviet tank to mount this weapon. (Anderson)

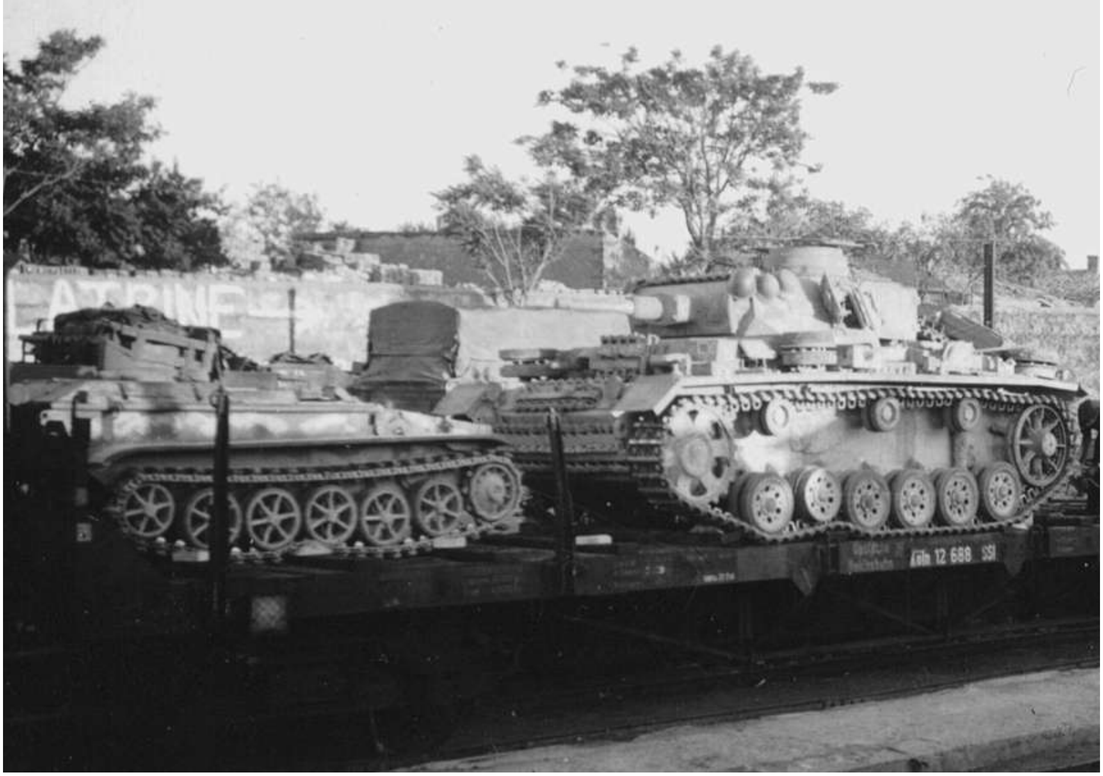
In the first six months of 1943, the majority of Russian tank and anti-tank guns were not powerful enough to destroy the Tiger in a front-on attack, but could cause damage with a hit on the sides of the hull or at the rear. But this depended on range. On muddy ground, the Tiger was at a disadvantage to the the T-34. However, Crisolli also recognized that his superiority was soon to be reduced by the enemy introducing better weapons.

The new PzKpfw V Panther medium tank was certainly more agile, and even by the standards of today it was described as a perfect balance between the three main features: firepower, mobility and armour protection.

Tank Battle at Kursk

At Kharkov, von Manstein had achieved a stunning success, but recapturing the city was certainly not a victory of strategic importance, but it did lay the foundation for a possible and decisive strike to the north, which could have influenced the course of war.

However, time was on the side of the Soviets. Although the Russians had lost around 11,000,000 men and a vast amount of equipment, between June



Above:
Among the *Sonderpanzer* (special tanks) used during Operation Citadel, were large numbers of SdKfz 301 remote-control *Ladungsleger* (explosive charge carriers). These small tracked vehicles were used to carry a charge, weighing approximately 500kg, which was dropped in the proximity of (or actually) on the target, and then be recovered. The SdKfz 301 was controlled from a PzKpfw III or *Sturmgeschütz*. (Anderson)

1941 and July 1943, the country still had more than enough soldiers and the resources to overcome the German aggressor. It was only a question of time.

Possibly some German strategists did continually assess the situation, and possibly von Manstein was one of them. After Kharkov he was eager to quickly exploit the moment and clear the threatened salient around the city of Kursk. His plan was to make an immediate attack on Soviet forces, then encircle and finally destroy them. However, an attack during the *Rasputitsa*, the mud season, was out of question; the earliest date would be at the beginning of May 1943.

A victory at Kursk would have shortened and stabilized the front, and German forces which had been under immense pressure since late 1942 would have gained precious time. After a victorious end to the battle, there would have been the possibility of building up strategic reserves.

Several incidents, among them the defeat of the *Afrika Korps* in Tunisia, induced Hitler to repeatedly postpone *Unternehmen Zitadelle* (Operation Citadel). While the time window was slowly closing, the Führer insisted on waiting for his new ‘marvel’ tanks to arrive. He was convinced that his *Panzerwaffe* would easily tip the balance in favour Germany. In March 1943, the Tiger was still not available in sufficient numbers, and the production of the new Panther medium tank was delayed by many problems. Furthermore, Hitler had great expectations for the new *schwere Sturmgeschütz* Ferdinand. This very heavy vehicle was the result of a 'secondary use' for the Porsche-designed Tiger tank; 100 chassis had been produced in advance. After this ill-fated programme was cancelled, it was decided to use the chassis to construct a breakthrough tank. It was fitted with an armoured casemate superstructure, with 200mm of frontal armour, and mounted the deadly 8.8cm PaK 43.

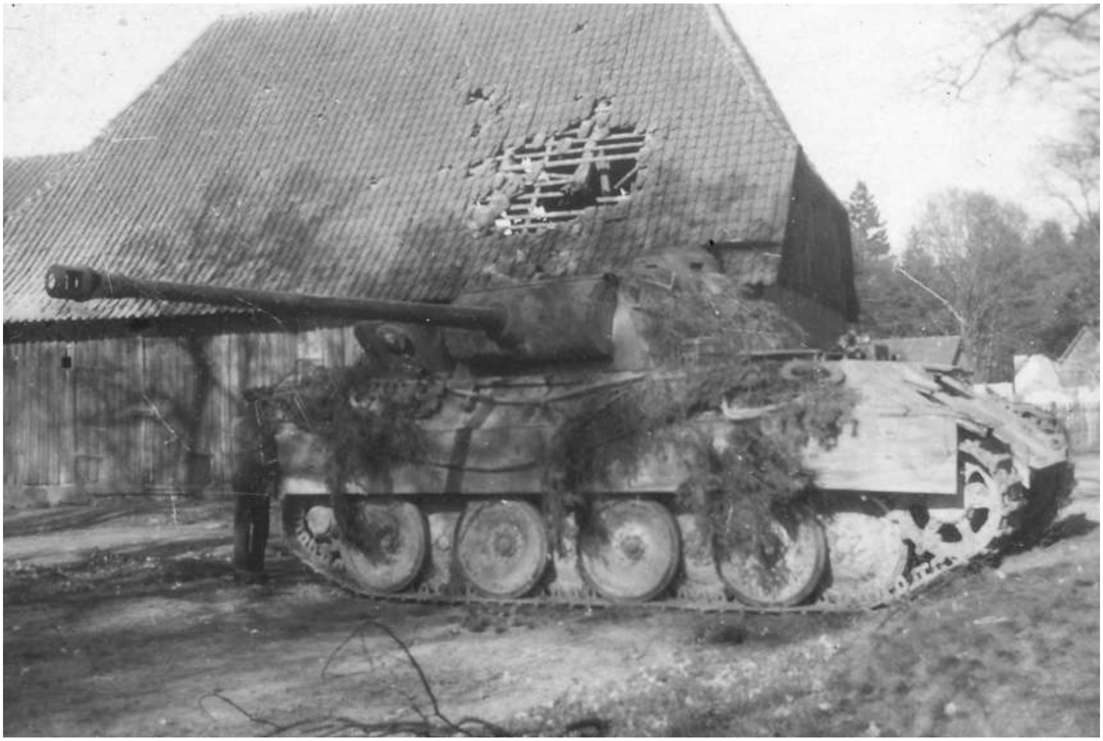
The Red Army 1943 – Mass production at all costs

The Russian defenders of Kursk had been aware of the German preparations, and due to repeated delays on the German side, there was plenty of time to establish strong defensive positions.

As time progressed, large elements of available Soviet forces were concentrated on the Kursk salient. The majority of the tanks were modern T-34 and KV, but there were still many obsolete T-26 available and large numbers of British and US-built tanks delivered under the Lend-Lease Program. Overall, the Soviets had managed to assemble a force of some 5,000 tanks (compared to 2,600 on the German side).

In 1942, the Russian armaments industry was busy producing replacement material to compensate for the vast amount lost. The introduction of necessary technical and mechanical improvements on the

Below:
A Panther Ausf D from an unknown unit, possibly in *Heeresgruppe Nord*, during late summer 1943. The tank, which has been barely camouflaged, is parked in among farm buildings for the crew to perform routine maintenance. (Anderson)

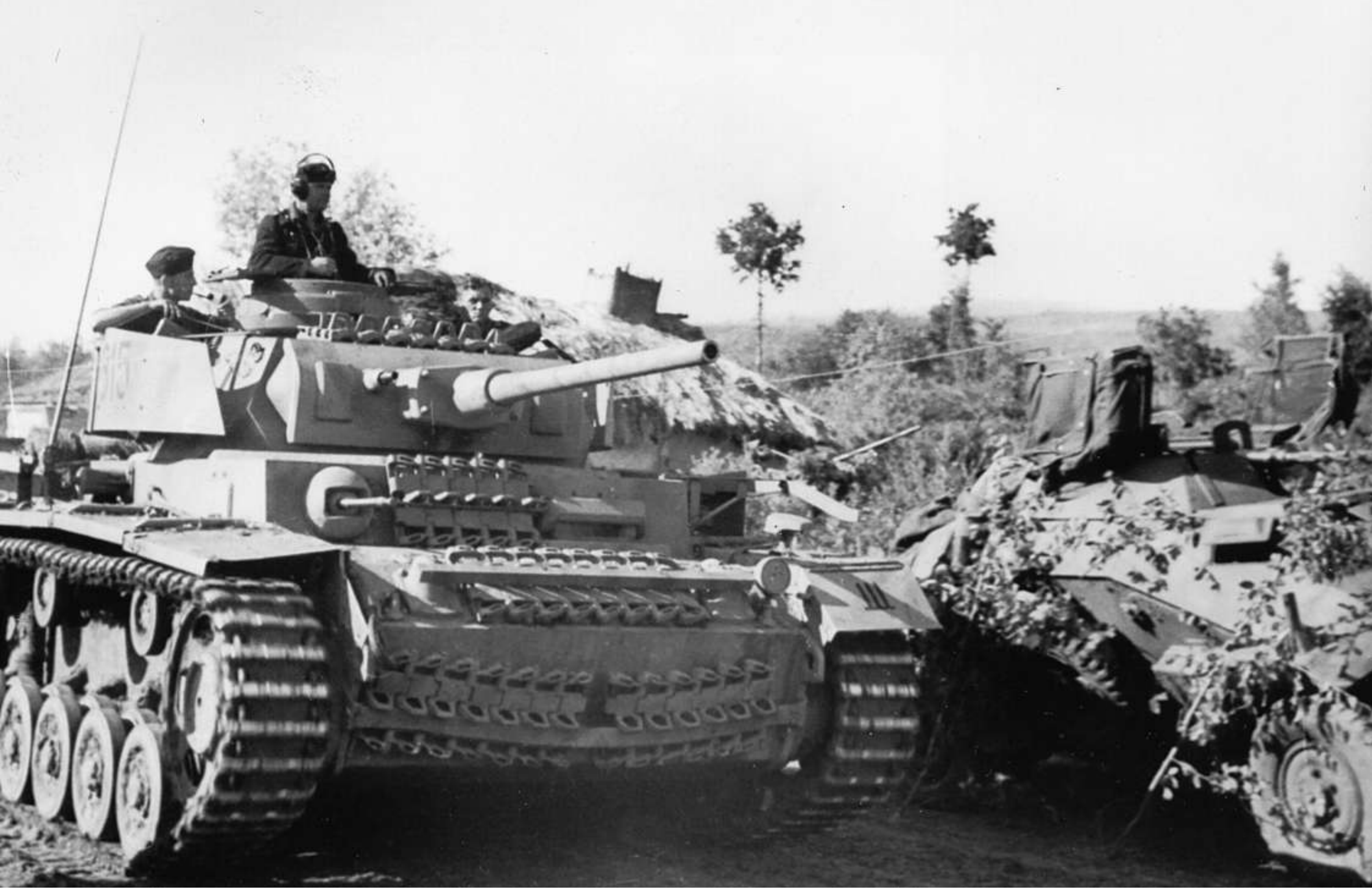


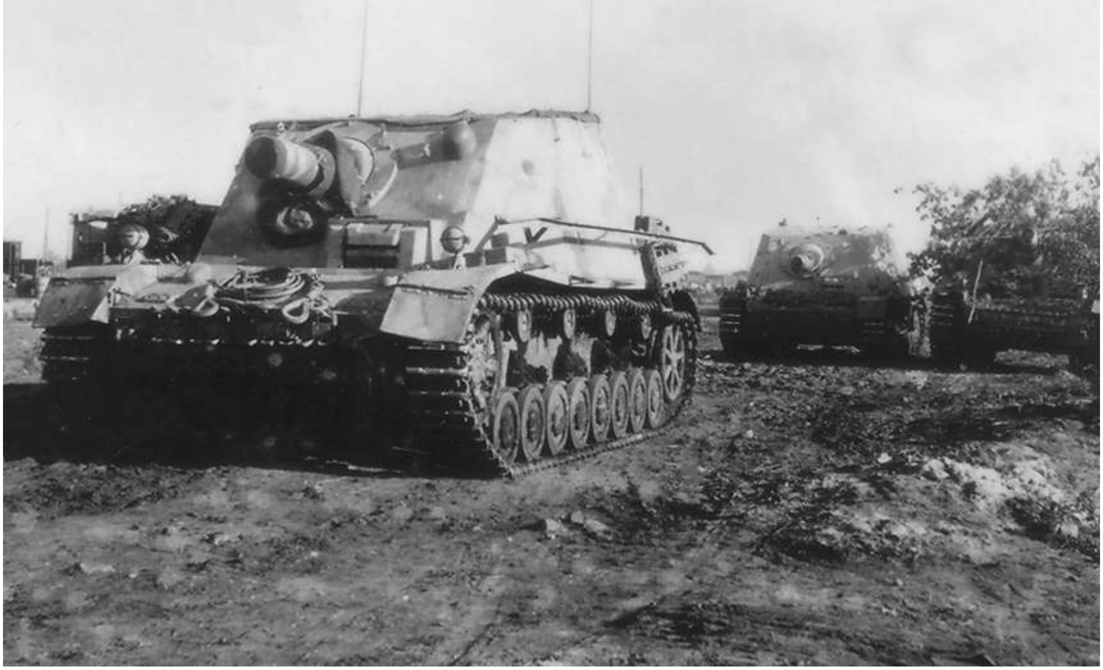
vitally important T-34 medium tank was not possible. After the German defeat at Stalingrad the situation slowly changed and matters improved. In the first instance a new more powerful gun(s) were desperately needed to defeat the Tiger heavy tank.

T-34

The surprising German invasion in 1941, forced the Soviet Union to expand the production of armaments without any regard to cost. But this approach would also affect the quality of the product. The T-34 was built basically unchanged until 1943, since any interference during the production process would have reduced output. However, after Stalingrad measures were taken to improve the effectiveness of the tank in battle. At Kursk, many different versions of the T-34 were used, among them the Model 1943, which was fitted with a three-man turret. However, it was not necessary to improve armour protection or firepower.

Below:
This PzKpfw III Ausf J (lang) produced in 1942 from 11.SS-PzDiv Totenkopf passes a *leichte Panzerspähwagen* (le PzSpWg) SdKfz 222. The tank is fitted with spaced armour around the turret, but does not have *Panzerschürzen* (side skirts). The divisional marking has been stencilled in black on the left-hand track guard. (Anderson)





Above:
Sturmpanzer (assault tanks), were developed to provide heavy high-explosive (HE) fire to destroy enemy strongpoints with little expenditure of ammunition. The vehicle was armed a 15cm *Sturmhaubitze* (StuH – assault howitzer) 43 L/12 installed in a heavily-armoured superstructure mounted on a PzKpfw IV hull. Here *Sturmpanzer* of StuPzAbt 216 move up to attack a target in the northern sector of Operation Citadel. (Anderson)

SU-122

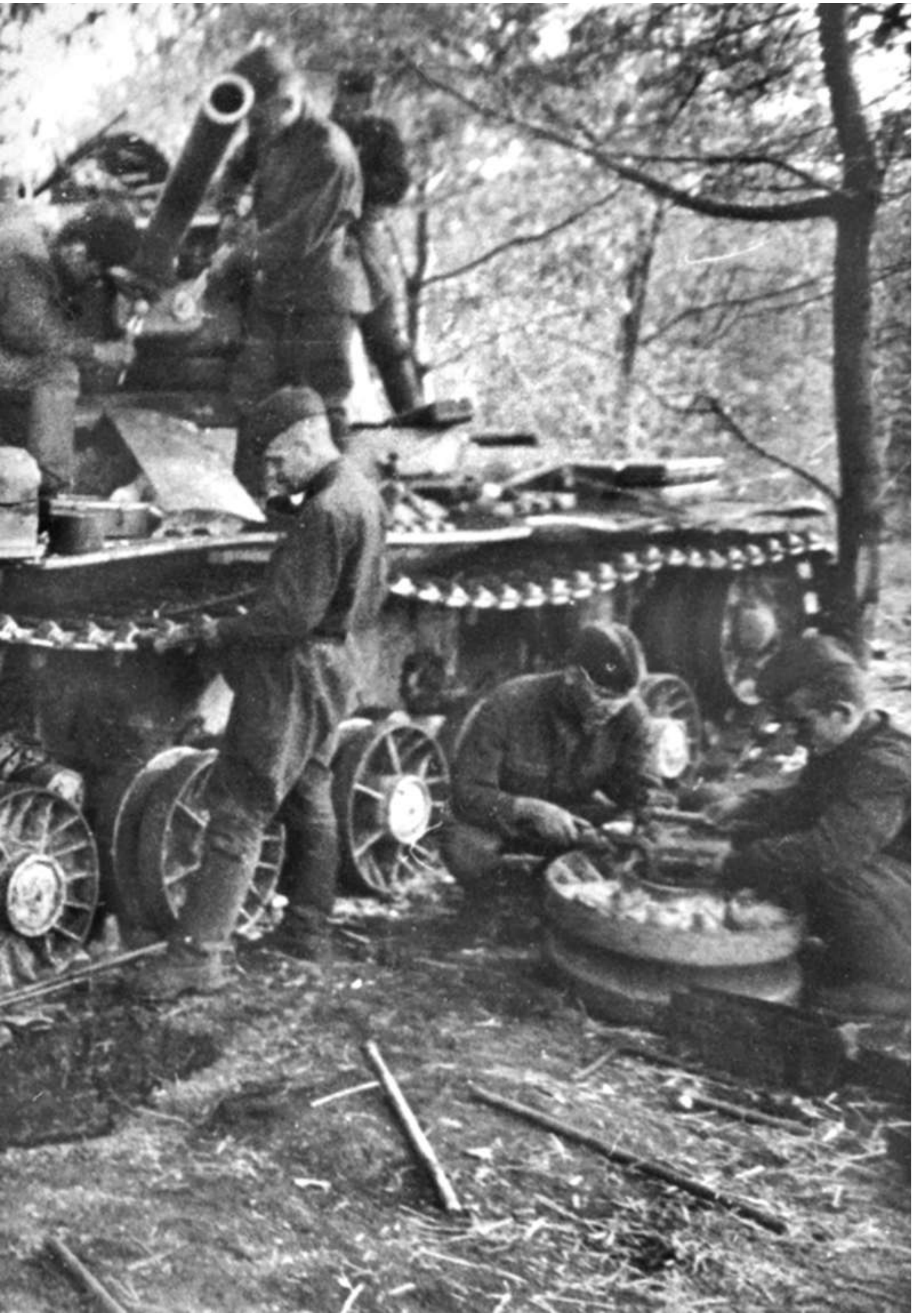
The introduction of the Tiger presented a great challenge to Soviet designers. Also all available anti-tank guns in service were almost useless against this tank. For this reason it was decided to install a conventional artillery gun on a tank chassis. A 122mm M-30 field howitzer was mounted in a rigid superstructure on the chassis of a T-34; similar in concept to the German *Sturmgeschütz*. Although far from being perfect, the SU-122 proved to be able to defeat German heavy tanks.

KV-1

As with the T-34, the heavy KV remained principally unchanged until 1943. However, the armour was continuously improved by adding more plate and the introduction of a cast turret lead to an increase of weight. In early 1943, a ‘scaled-down’ version, the KV-1S (*skorodsnoi* – fast) entered service. Initially armed with the 76.2mm gun, the Soviets soon decided to install an 85mm gun. Production of the KV-85 began at a slow rate, but it would be capable of challenging German tanks.

SU-152

The chassis of the KV-1 was also used to create a heavy assault gun, armed with the 152mm howitzer. The Soviets had for the first time a vehicle capable of getting heavy ordnance close to an enemy’s position. The 152mm gun could also be used to fight Panther, Tiger and Ferdinand.



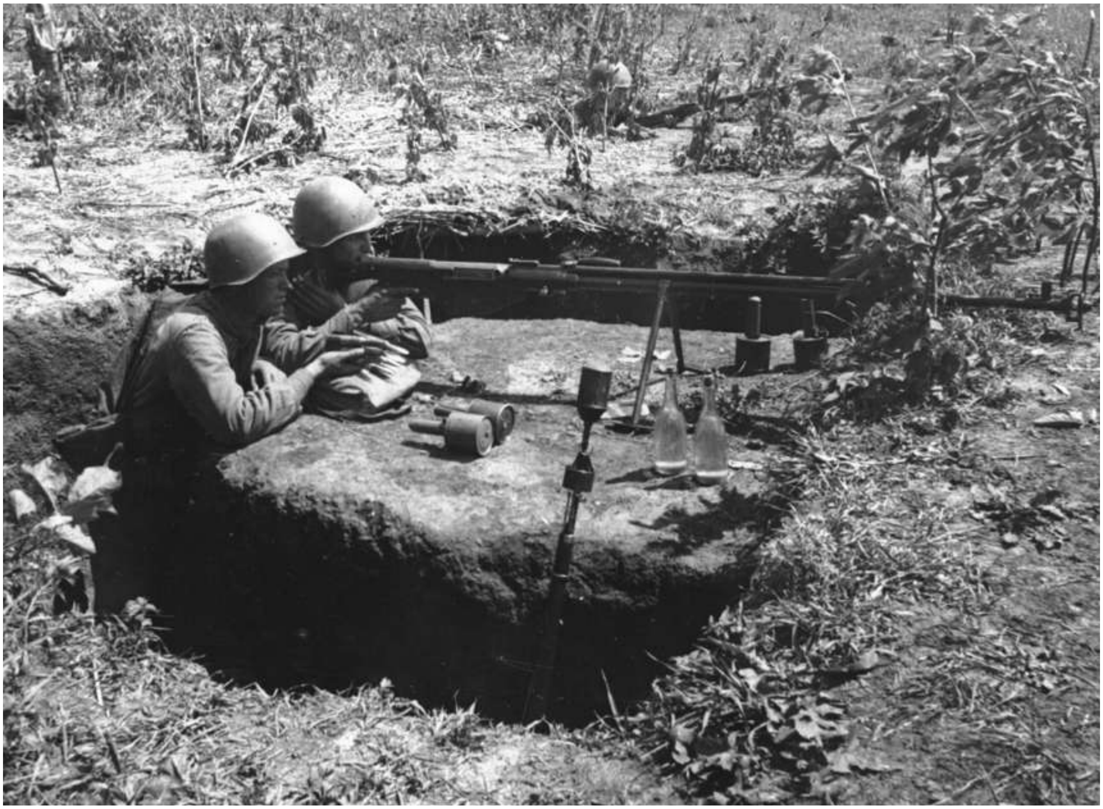
Left:
A team of Soviet engineers carry out (literally) 'in field repairs' on a KV-1 heavy tank. Possibly as a vehicle jack was not available, they have dug a pit under the right suspension in order to replace a running wheel. Other members of the team are working on the recuperator of the 76.2mm F-34 gun. (Getty)

Unternehmen Zitadelle

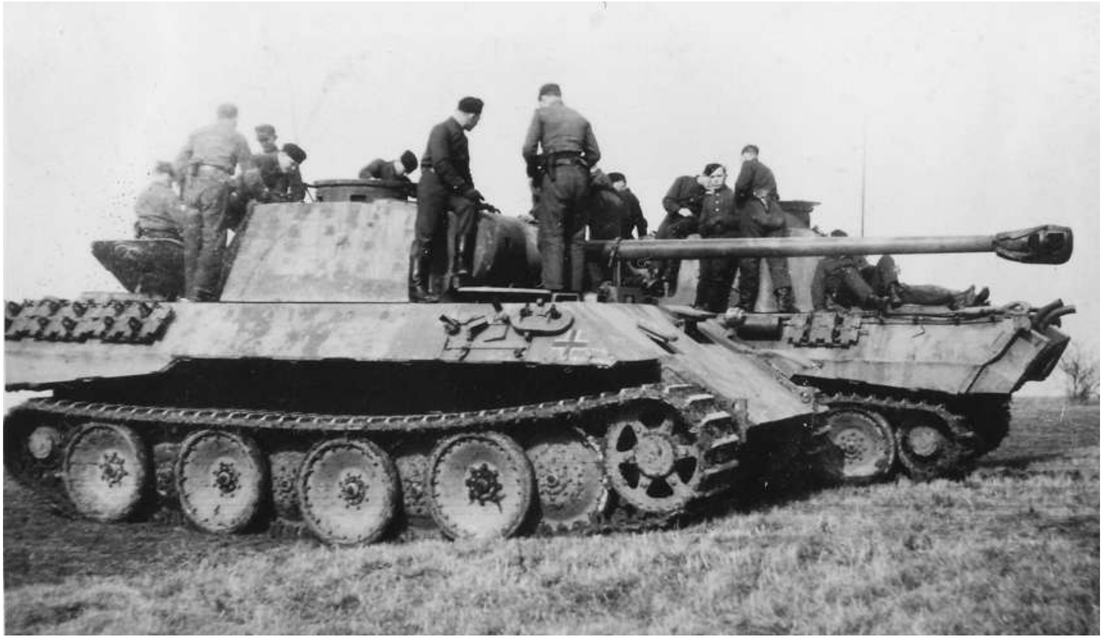
On 5 July 1943, German forces opened their attack with a wide pincer movement from north and south, but their advance moved at a slow pace. In the northern sector, the Panzer force, including Tigers and Ferdinand, were soon halted by minefields, also the heavy artillery barrage had turned the terrain into a cratered landscape, virtually immobilizing the tanks. Remote-controlled demolition charge carriers, which should clear the mines, were called for, but these also failed. The advance had been halted.

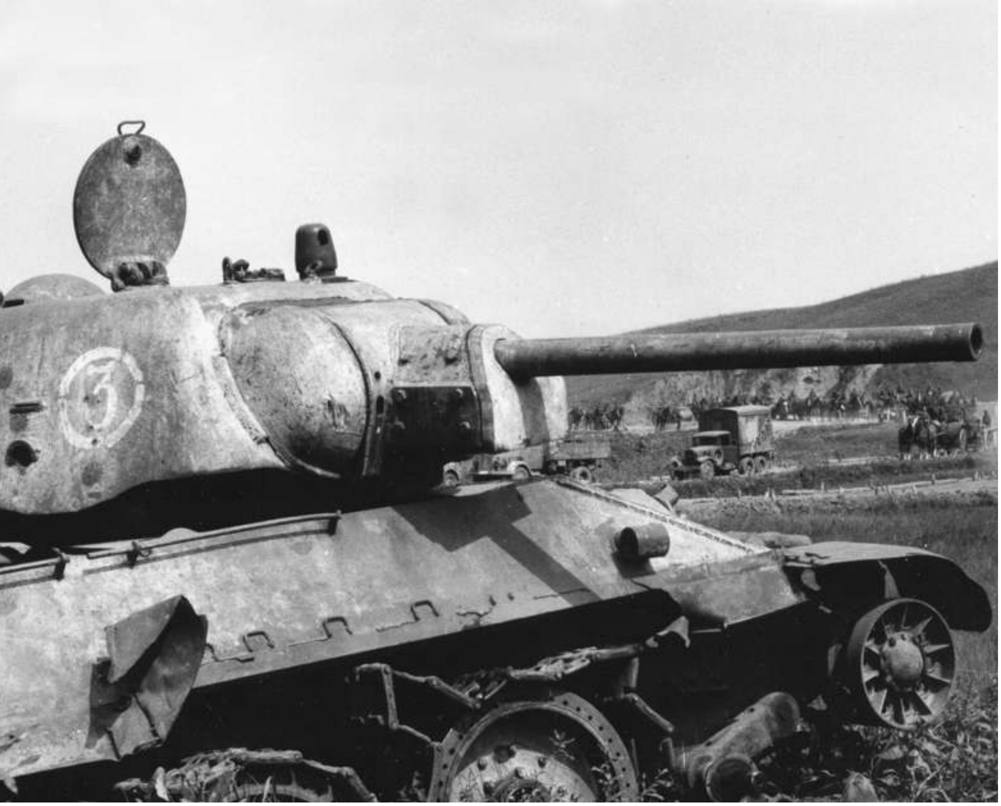
In the southern sector, von Manstein was more successful. His forces had been reinforced by PzRgt 39 equipped with 200 Panther tanks. However, the new medium tank proved to be mechanically vulnerable, and many failed due to minor faults possibly caused by the chaotic start to production. Indeed, this had begun without any preceding trials phase. On 9 July, the number of combat ready Panther tanks in PzRgt 39 was reduced to 16, less than 10 percent of their initial strength.

Under these circumstances, the initial successes on the battlefield could not be exploited, the assault ground to a halt. When on 10 July, British and



Below:
A Soviet close-combat team armed with a 14.5mm Degtyaryov PTRD single-shot anti-tank rifle, 'Molotov Cocktails' (petrol-filled bottles) and grenades. Also available was the 14.5mm Simonov PTRS 41 fitted with a five-shot magazine. Both types were simple to manufacture and vast numbers were supplied to the Red Army. (Getty)





Above:
During 1943, increasing numbers of PzKpfw V Panther tanks were being delivered to Panzer units. As production progressed, a large number of modifications were made many of which were fitted to tanks in the field by workshop companies. (Anderson)

Left:
The T-34/76D Model 1943 was fitted with a three-man turret which allowed the commander to concentrate on directing his tank. Later versions were fitted with a cupola on the top of the turret, which considerably improved observation. The small pot above the first missing road wheel is the mounting for a fold-down radio aerial. (NARA)

Above: Marsh-type terrain can even affect the mobility of tracked vehicles. A PzKpfw VI Tiger Ausf E from s PzAbt 503 crosses over a row of tree trunks positioned by pioneer troops to allow the tank to negotiate an area of very soft ground. (Anderson)

US forces landed on Sicily (Operation Husky), the strategic situation changed. Hitler ordered the cancellation of the halted *Unternehmen Zitadelle*, and several core formations were deployed to Orel and also Italy.

Although German tank losses were surprisingly low (estimations range from 250 to 350; less than 10 percent of Soviet losses), the defeat did mark a decisive turn in the war on Russia.

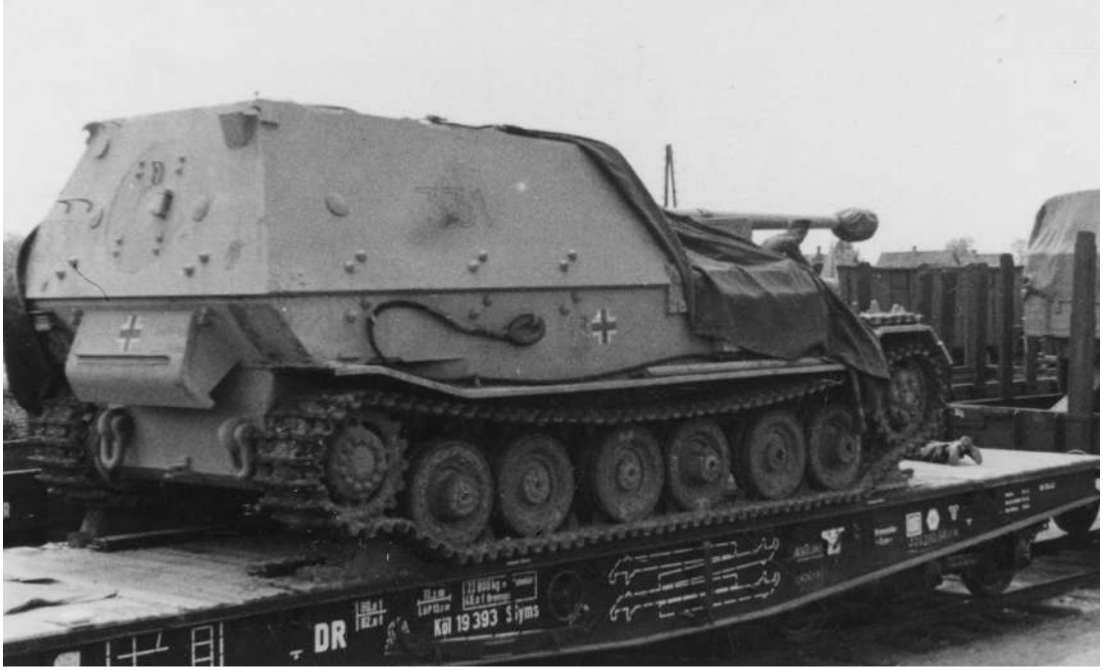
German forces had finally lost their strategic initiative; now it was forced to wage war on two fronts; the shortage of men and material could only be managed. In the east the Soviets were able to mobilize their reserves and expand their numerical superiority, also to establish new units.

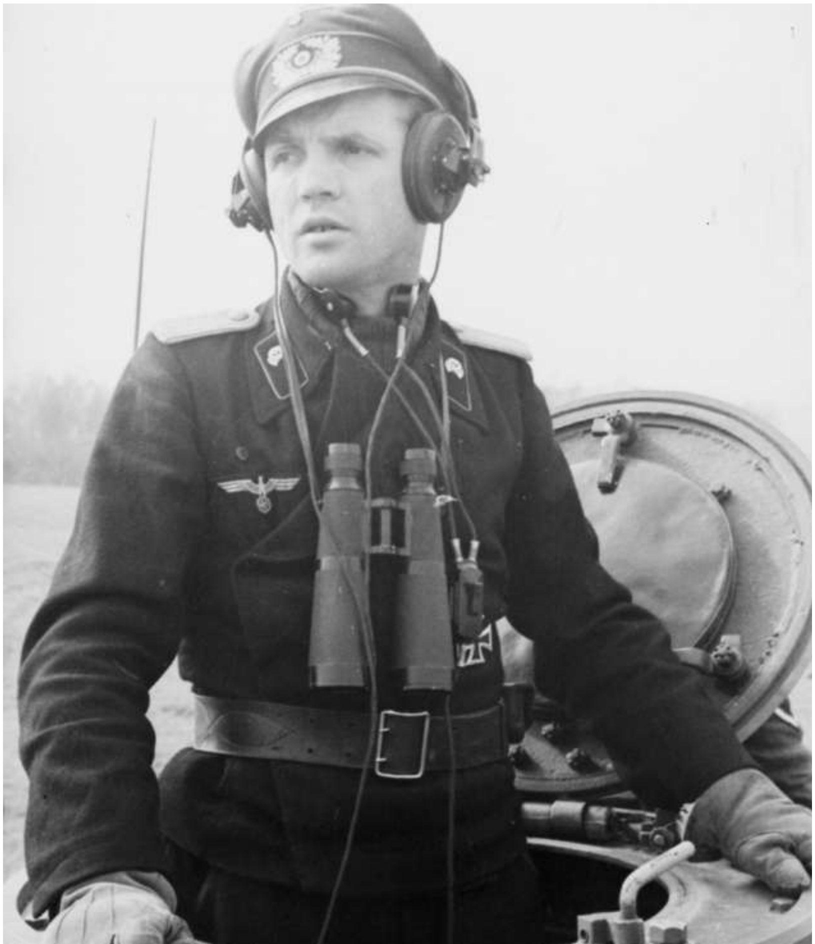
In the second part of 1943, Soviet forces pressed the Germans into a retreat. After liberating Belgorod and Orel, the river Dnieper was crossed and Kiev was captured in November.

The *schwere Panzerabteilungen* (s PzAbt) 503, 505 and 502 only with 1.Kp were intended to perform as the lead elements of an attacking forces. The following report, submitted by the commander, details how this usage of the Tiger ran into problems:

German tanks at *Zitadelle*, 5 July 1943

PzKpfw II	PzKpfw 38 (t)	PzKpfw III (kurz)	PzKpfw III (lang)	PzKpfw III (7.5cm)	StuG III	PzKpfw IV (kurz)	PzKpfw IV (lang)	PzKpfw Panther	PzKpfw Tiger	s StuG Ferdinand	PzBefWg Command tanks
107	12	125	563	325	450	58	682	200	132	90	111





Above:
The SdKfz 184s Ferdinand (later *Elefant*), was initially designated as a *schweres Sturmgeschütz* (heavy assault gun), and was the most powerful type used during the battle of Kursk – in theory. Although the 8.8cm PaK 43/2 L/71 could defeat any enemy tank at ranges up to 3,000m, the extremely heavy vehicle was difficult to manoeuvre and had poor mechanical reliability. (Anderson)

Left:
A *Leutnant* (2nd Lieutenant) of an unidentified Panzer unit in the cupola of a Panzer IV: He wears standard communications equipment, a throat-type microphone and headphones. (NARA)

On 4 July 1943 at 00:00hrs, s PzAbt 503 was combined with one company each from 6.PzDiv, 7.PzDiv and 19.PzDiv.

Report by *Hauptmann* Graf von Kageneck, commander of s PzAbt 503:

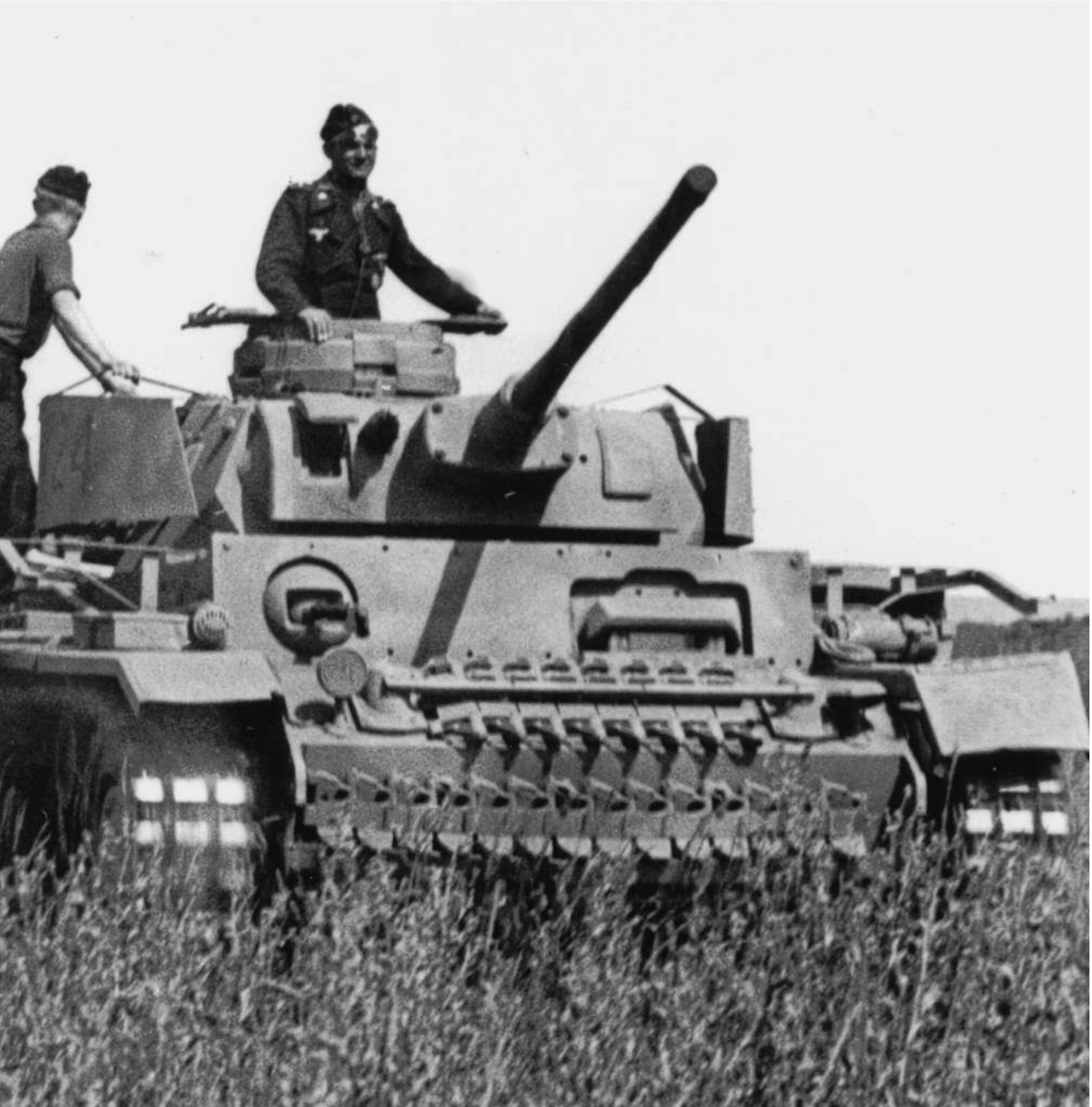
On 5 July 1943, the battalion reported to III.PzKorps the failure of 13 of the 14 Tigers in one company, which had been combat ready in the early hours of the morning. Five had been immobilized by mines. Repair will take two to three days.

The incredible loss of 13 out of 14 tanks at the start of the battle was caused by incompetent surveying by the pioneer section. It was known that a mine, possibly buried with an artillery shell for more effect, could stop even the 'invincible' Tiger tank. Mines had to be cleared, before a successful combat could take place.

The report continues:

> The original planning, which saw Tigers committed in close support of the *Panzergrenadiere* which were close behind the mine clearing. By the evening of 5 July, four Tigers were positioned 50 to 80m in front of these infantry

Below:
Two of these PzKpfw IIIs are fitted with *Panzerschürzen* and spaced armour around the turret. However, not all tanks could be fitted as supply was inconsistent due to a shortage of armour plate. (NARA)



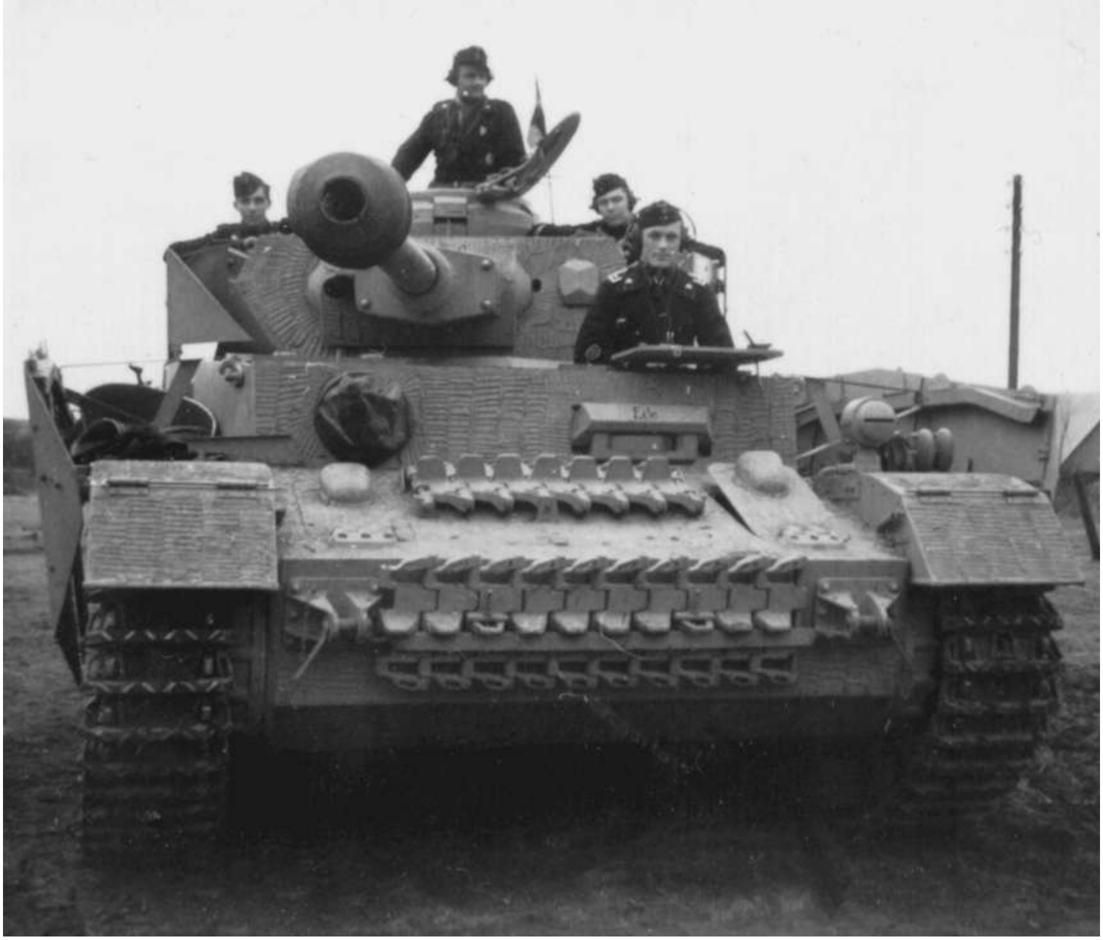
echelons. As a consequence of this negligent action, eight Tiger were damaged and immobilized for two to three days. In this period, these tanks were not available for their intended purpose; to combat enemy tanks and heavy weapons.

Between 5 and 8 July, a total of 34 Tigers failed and required long-term repair. Of these, seven were hit by enemy fire, 16 damaged by mines, nine due to mechanical problems, and two which had burnt out totally. Up until now, 22 have been repaired.

Tiger situation on 8 July:

Lustig (– happy/operational): 33
Matt up to eight days (– feeble/in need of repair): Eight
Matt over eight days: Two
Müde (– tired/destroyed): Two

Below:
Immediately after the Kursk debacle, the German armaments industry began to apply a coating of Zimmerit paste to production tanks before delivery. This was to prevent enemy troops attaching magnetic charges to the armour of a tank. The coating is clearly visible on this PzKpfw IV Ausf H, named 'Ede' by the crew. Note the new type of support brackets for the *Panzerschürzen*. (Zöllner)



Above:
German workshop units were often called on to repair a broken down tank in the field, or to perform a recovery. Here a *schweres Zugkraftwagen* (s ZgKw – heavy tractor unit) SdKfz 8 is hooked-up to a 24-ton PzKpfw IV Ausf G or H. With a towing capacity of 12 tons, the hauling power of the vehicle will be tested to the limit. (Anderson)

It appears that the commander of s PzAbt 503 had not lost his sense of humour.

On 21 July, *General der Panzertruppe* Breith, commander of III.PzKp, summarized experiences with the Tiger tank:

> Based on experience gained during the recent fighting, I give the following suggestions for the cooperation of the Tiger and other service arms:
>
> 1.) Because of its high-performance gun and heavy armour, the Tiger must be deployed primarily against enemy tanks and anti-tank weapons; combat against infantry targets is only secondary. The ordnance enables the tank to fight enemy tanks at ranges of 2,000m and more, and also has a considerable effect on the morale of the enemy. Thanks to the heavy frontal armour, the Tiger can advance close to an enemy tank without any danger. It is, however, desirable to fight at ranges over 1,000m. Before combat; a thorough reconnaissance of the terrain must take place… Company and platoon commanders also the commander of each tank must not frightened of getting out of their tank to examine the ground on foot to prevent a tank or whole unit getting bogged-down… *Sturmgeschütz*, armoured half-track vehicles also the light and medium tanks have to closely follow the Tiger. It is their prime task to guard the flanks of the Tiger and then to occupy territory gained as the heavy tanks advance. In this situation, the *Grenadiere* have to neutralize the constant danger from enemy anti-tank and close-combat teams.

Above:
Any tank *Beutepanzer* captured intact by German forces on the eastern front, such as this T-34/76B Model 1941, was pressed into service. German markings have been stencilled on the sides of the turret, and as an extra precaution a swastika flag has been placed over the turret hatch to prevent an attack by patrolling *Luftwaffe* aircraft. (Anderson)

> 2.) In the following the *Grenadiere* must continue exploiting the high morale effect of the Tiger… Captured positions have to be thoroughly searched and cleared of enemy infantry.
> 3.) During the attack on 5 July, in one sector our pioneers had laid mines, and this seriously hampered the deployment of Tigers. Unaware of this barrier… the Tiger company deployed for the attack almost failed completely in their task during the initial phase.
> 4.) I absolutely forbid the commitment of tanks, including the Tiger, in under company strength. In defence, the tanks have to be assembled in task force groups ready to perform counterattacks if enemy forces attempt a breakthrough.
> 5.) This document must be destroyed after reading.

During the Battle of Kursk, PzRgt 35 (4.PzDiv) attacked the Soviet positions from north. After the commitment, the commander of I./PzRgt 35 reported on 21 August 1943:

> Russian combat tactics: observations made from 8 July to date.
>
> Defence:
> In their system of field fortifications, the Russians had prepared positions at tactically well chosen and dominant landmarks. The tanks had only to move into these positions, where they would be dug-in and used as armoured

machine-gun nests or artillery positions. The battalion encountered one such a position when attacking Height 274.5; the attack was halted, as combat against the dug-in [hull down] tanks was most difficult. Our forces were too spread out to restart the attack and take the enemy from behind.

The Russian tanks, especially the T-34, KV-1 and KV-2 proved to be ideal for this type of fighting. If it is impossible to attack a dug-in opponent from behind, the only alternative is to use a combination of massed artillery and attacks by Stuka aircraft.

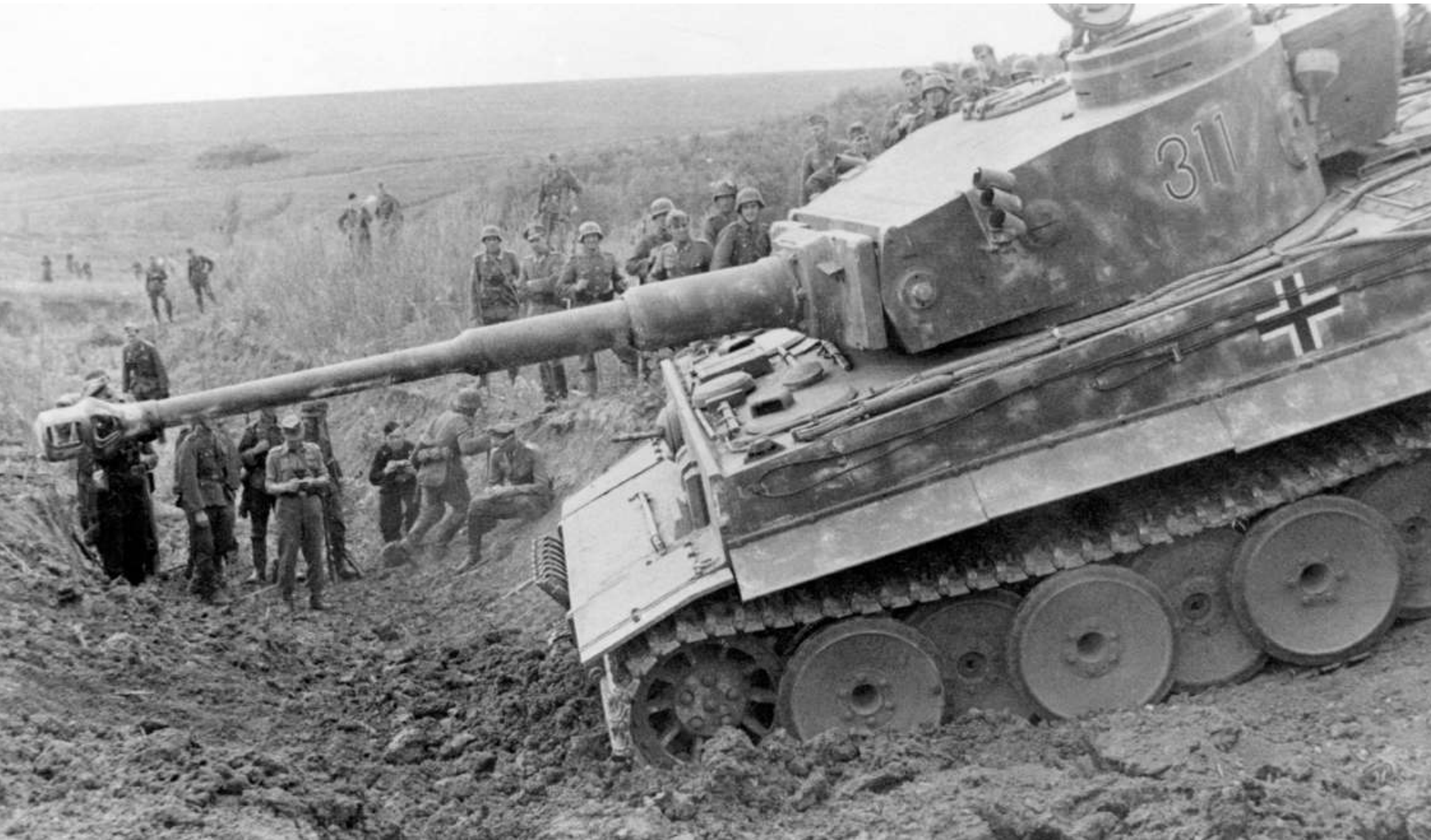
Beside the dug-in tanks, the Russian commanders keep numbers of tanks in reserve, ready for a swift counterattack.

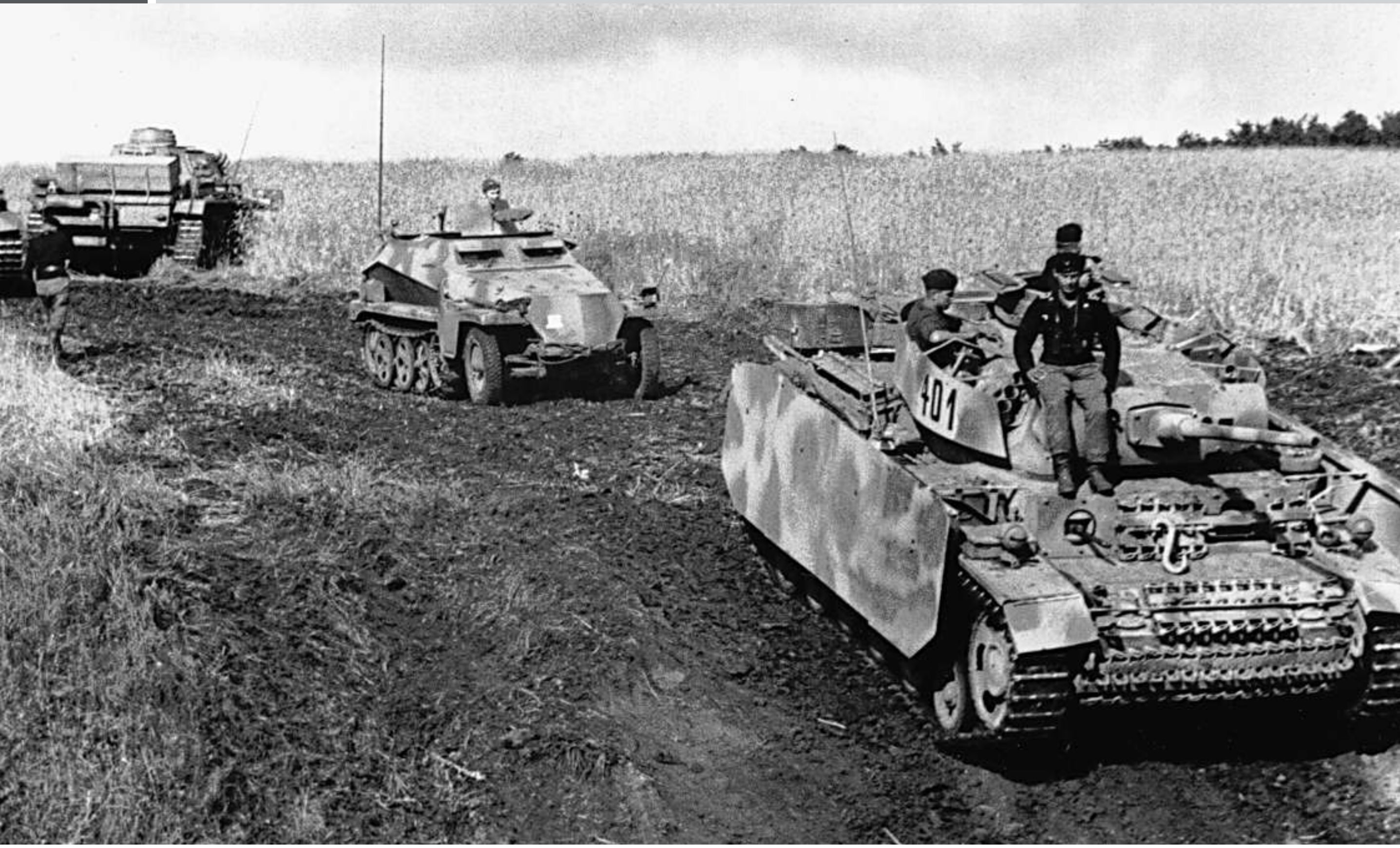
Attack:

After the German attack was halted, the Russians began a counterattack. Making best use of his superiority, he searched for the weak point in our front, and attacked initially with few tanks at Trossna. Despite his tactically advantageous position, we were able to repel him in the developing tank battle. Subsequently, the Russian transferred his main of point attack to Tchern, where he deployed 200 tanks. Then he attacked with 100 tanks before heading to Gostomol. Since the enemy proved to be unable to use his tanks successfully regarding fire and mobility, his right flank became stuck in front of our battalion… After his five leading enemy tanks were knocked-out south of Krasnikovo, his attack collapsed.

In the further course of the battle, our tanks took up reverse-slope positions. All further attacks by groups of up to 60 tanks were beaten off.

Below:
In spring 1943, a large demonstration of new weapons took place during the visit of a Turkish military delegation. Here a Tiger/E of s PzAbt 503 covered with a heavy coating of *Tarnpaste* (camouflage paste) – olive green and chocolate brown over a dark yellow base – negotiates a shallow ditch. Such a manoeuvre required great care by a driver; if the drive sprockets hit the ground hard, the delicate final drive units could be seriously damaged. (Anderson)





Above:
A PzKpfw III of 3.SS-PzGrenDiv Totenkopf; the tank is fitted with spaced armour around the turret and *Panzerschürzen*. Although a significant amount of this armour was sent to the battlefront to be fitted by workshop sections, there was never enough for all tanks in a unit. The *leichte Schützenpanzerwagen* (le SPW) SdKfz 250 is probably from the reconnaissance battalion. (NARA)

> Steady heavy losses forced the enemy to remain at a safe distance in open terrain. In the following hours, he launched only limited attacks, with infantry support, against single villages. The enemy was unable to launch a combined mass attack, and all further attacks were haphazard inflexible thrusts against our positions. Other than committing his tanks to assist infantry assaults, he repeatedly tried to penetrate our lines in brigade strength using German-style tactics. However, the Russian still lacks the skills to carry on the assault after breaking through our infantry lines. His tanks will usually simply stop and wait, easy for our guns to knock-out.
>
> If on a similar occasion a German tank unit (at least in company strength), led by a commander skilled in mobile defensive warfare is attacked by Soviet forces, the enemy will not be successful.

The commander's report shows the confused situation existing in German attack forces during *Unternehmen Zitadelle*. In the run-up to this decisive battle, the Soviets had fortified their established positions, which could not be easily attacked and destroyed by using 'standard' tactics. The Germans obviously observed what the Soviets were doing but took no action. Possibly they were grossly negligent in placing too much confidence in their special weapons – *Ladungsleger* (demolition charge carriers) and *Sturmpanzer* – being able to make the break through.

He also notes that the Soviets were becoming more tactically aware and used their forces with skill.

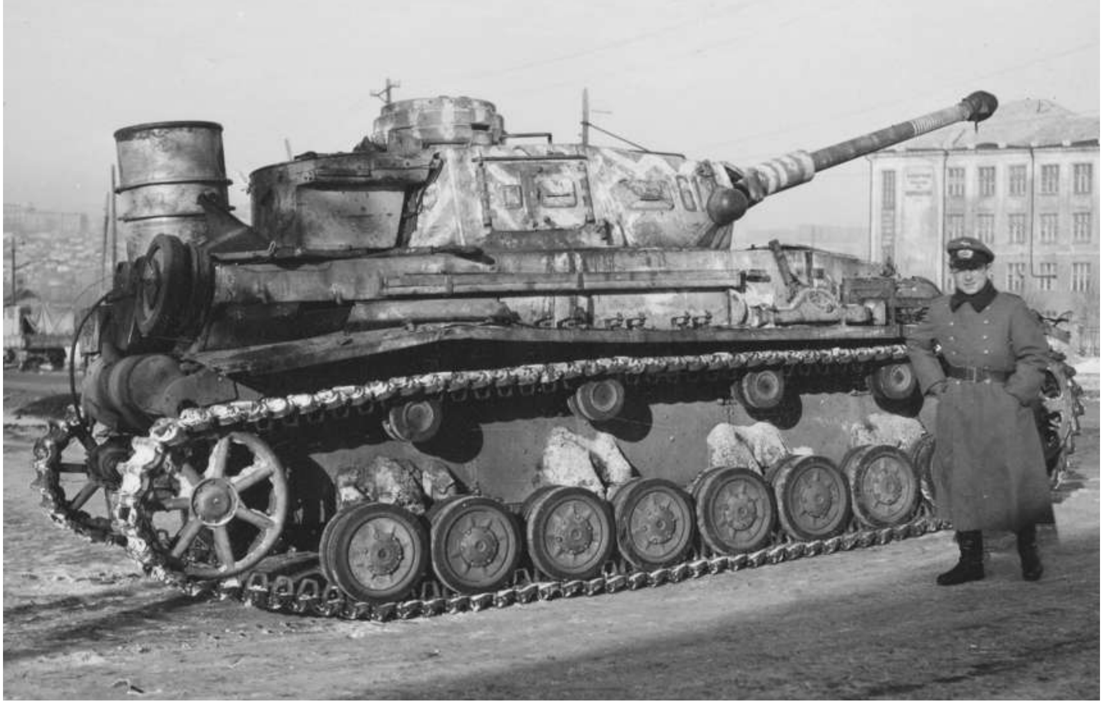
Despite the Panther and Tiger becoming available increasing numbers, in the second half of 1943 the majority of tank units fought using the older types. One was 16.PzGrDiv which was established immediately before Operation Citadel by reorganizing the 16.InfDiv. The unit's tank detachment, PzAbt 116, was equipped with 50 tanks (see below).

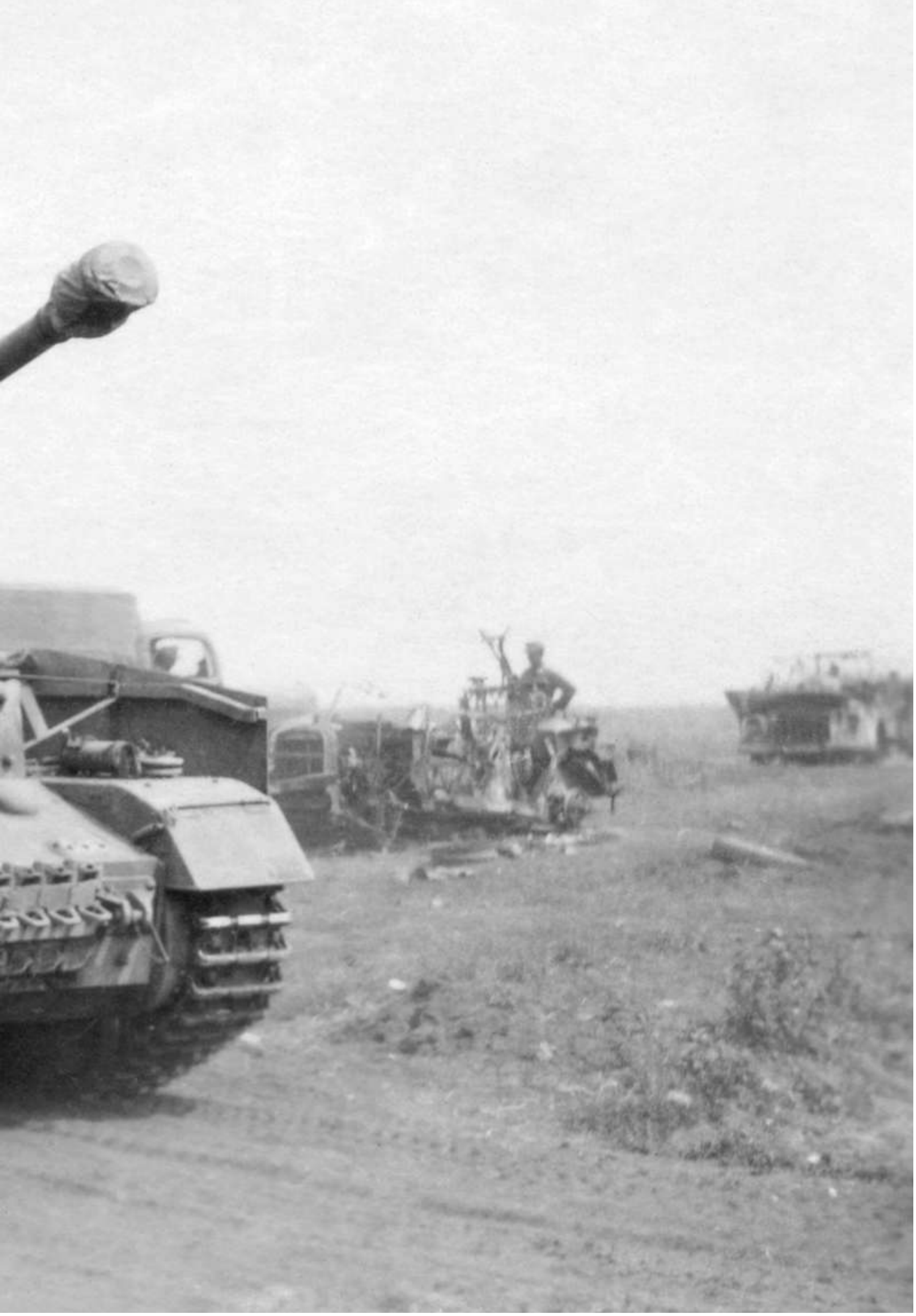
16.PzGrDiv 1 July 1943	PzKpfw II	PzKpfw III	PzKpfw III (lang)	PzKpfw IV (7.5cm)	PzBefWg (lang)
	4	32	5	11	1

On 29 February 1944, the unit submitted a final report for the period 1 July 1943 to 31 January 1944:

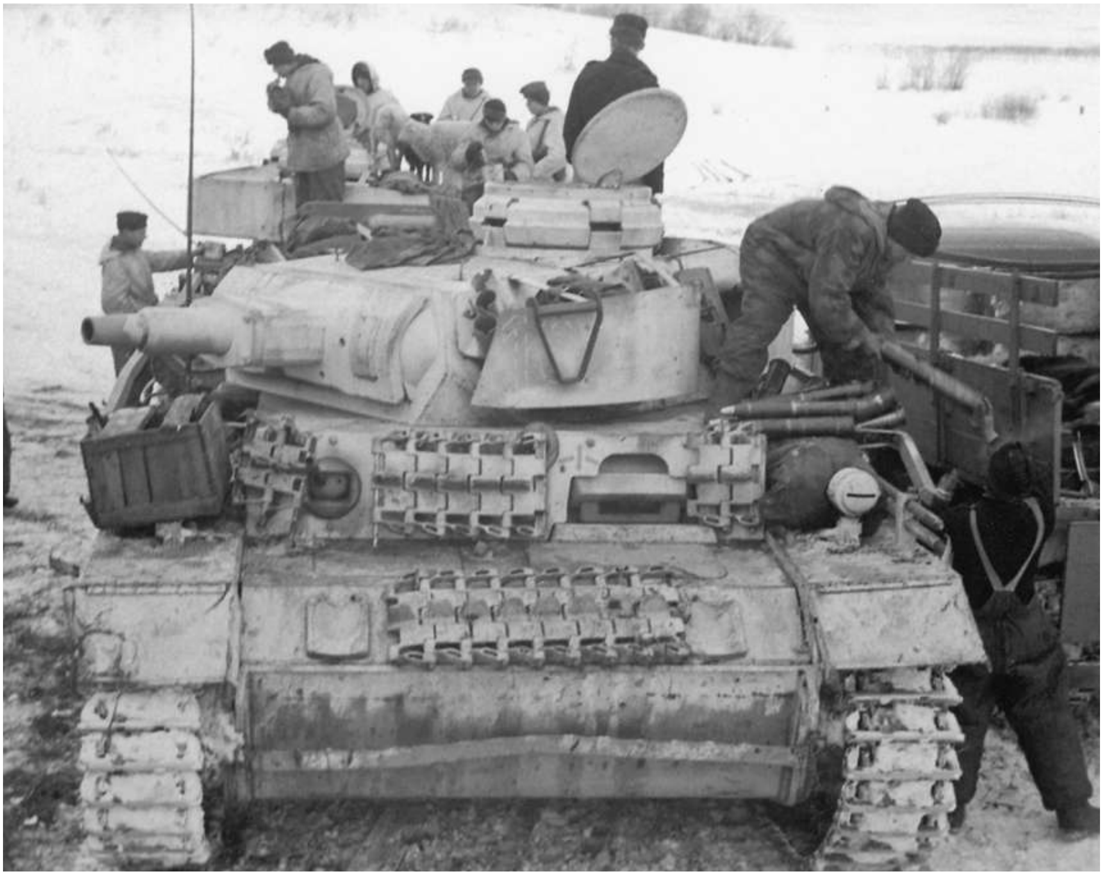
> Final report:
>
> In the time from 1 July 1943 to 31 January 1944 the combat echelons of PzAbt 116 covered 3,020km. In this period 76 battles were fought.

Below:
Despite the introduction of the PzKpfw V Panther and the PzKpfw VI Tiger, the Panzer IV, mounting a 7.5cm KwK L/43 (lang) would remain the backbone of the *Panzerwaffe* until end of the war. The crew of this Ausf F or G has painted 19 rings on the gun barrel to indicate their number of kills. (Anderson)





Left:
A PzKpfw IV Ausf G in late summer 1943: the tank has a full set of *Panzerschürzen* (side skirts), but due to the support brackets being vulnerable many were quickly lost in action. However they did give extra protection against fire from a Soviet anti-tank rifle. Note the spread eagle badge of 2.PzDiv, stencilled on the spaced armour around the turret. (Erdmann)



Above:
In 1942, the combat life of the 7.5cm KwK L/24 was extended due to the development of more sophisticated ammunition. For this reason, all production PzKpfw III were mounted with this gun, this also applied to tanks being refurbished. The crew of a PzKpfw III Ausf N from PzAbt 21 (20.PzDiv) is loading ammunition during the winter of 1943/44. The tool hanging from the spaced armour around the turret is a track tensioner. (Anderson)

Success:

251 tanks, including:	Two KV-1	12 SU 122
	227 T34	One General Lee
	One T60	Eight T70
245 guns, including:	12 guns 12.2cm	40 guns 7.62cm
	147 PaK 7.62cm	43 PaK 4.5cm
	10 AA guns 7.62cm	87 grenade launchers
	164 anti-tank rifles	34 trucks

4,680 enemy soldiers killed in action and 435 POWs.

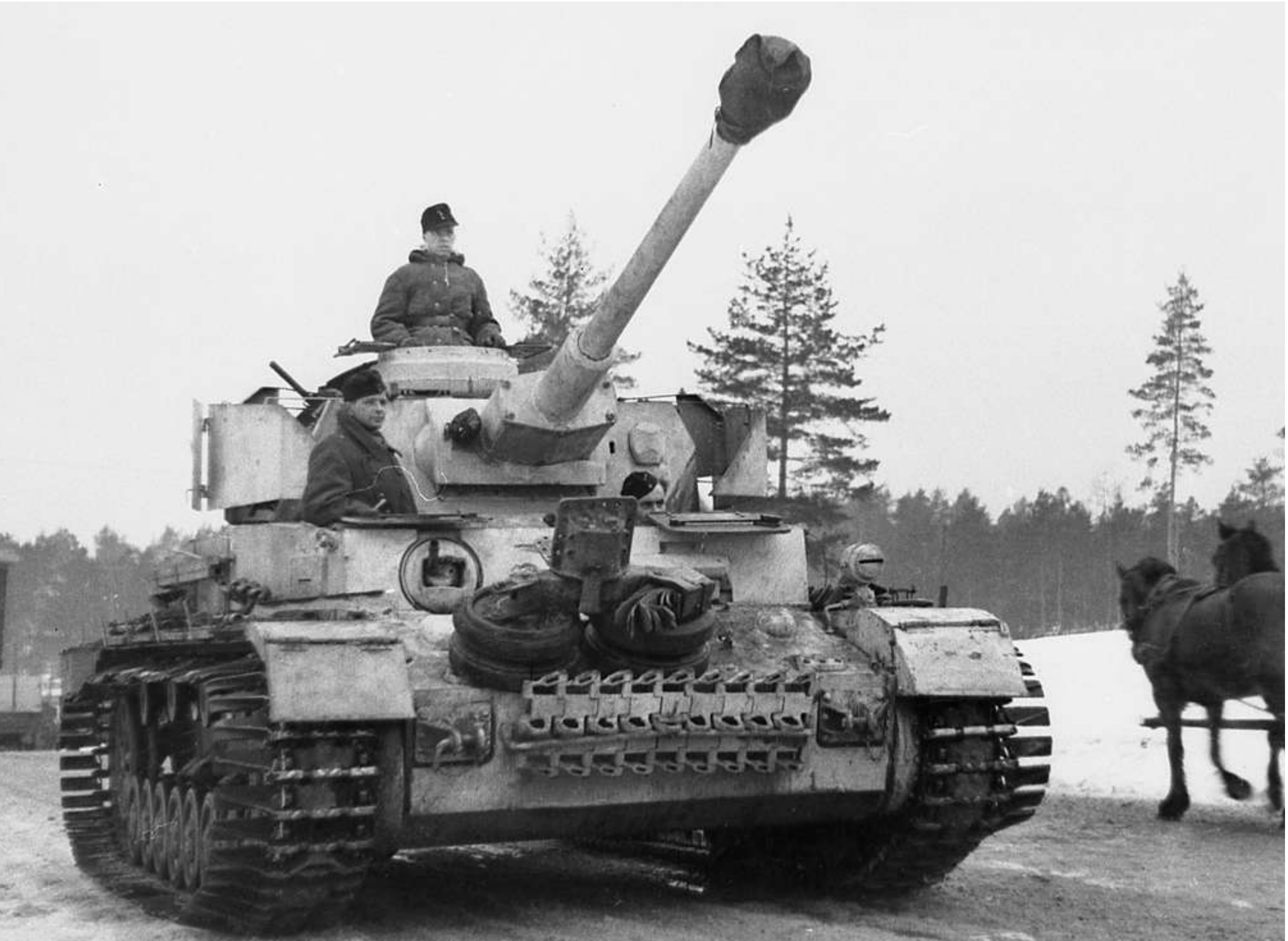
Own losses:

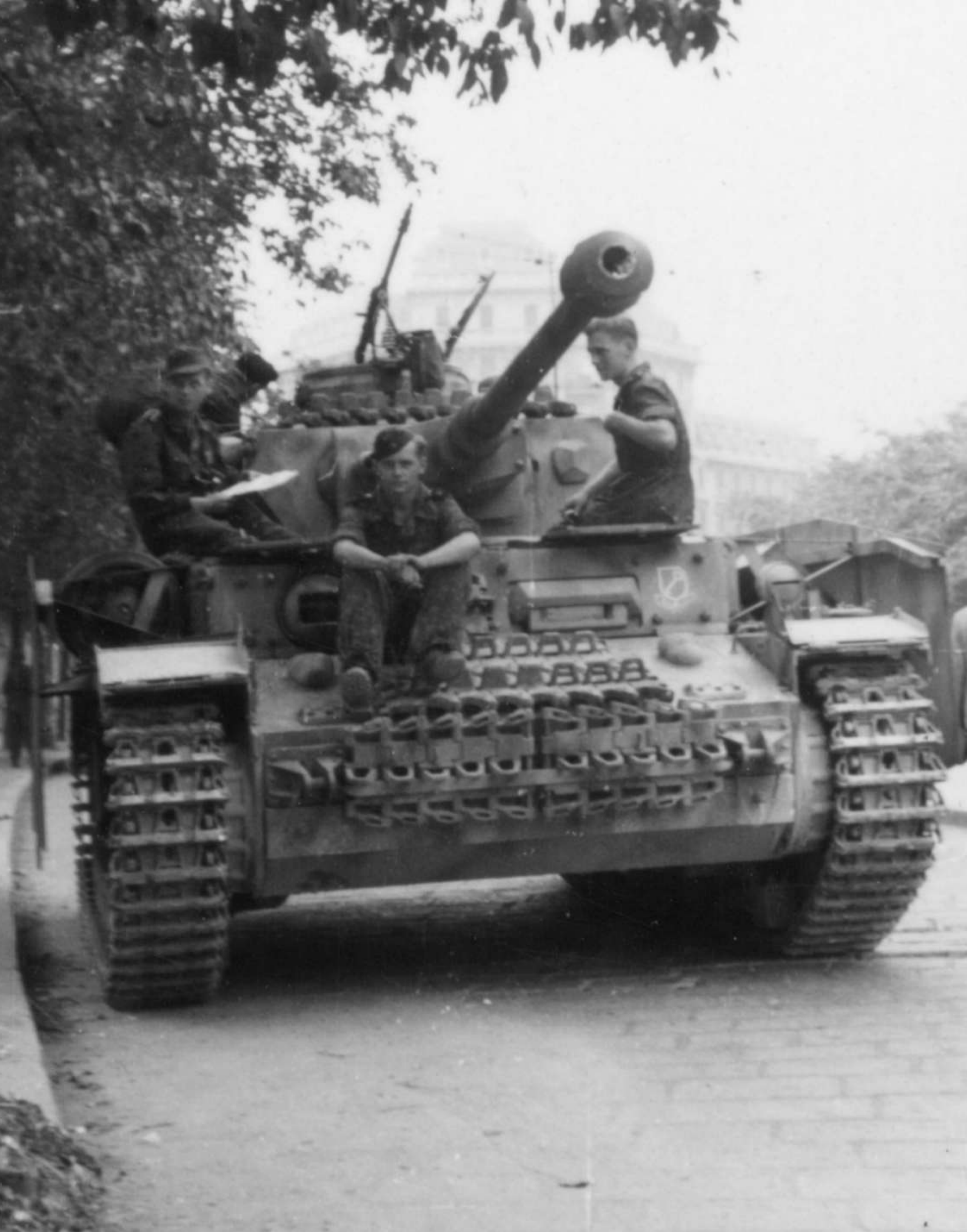
a) Personal	43 killed in action
b) Material	
37 tanks,as follows:	26 PzKpfw III
	Seven PzKpfw IV
	Two PzKpfw III BefWg
	One PzKpfw III 7.5cm (kurz)

Total losses	
To enemy fire:	21
Failed and lost to the enemy:	Two
Failed and blown up:	Eight
Ammunition consumed:	4,687: 7.5cm, SprGrPatr (lang)
	1,798: 7.5cm, PzGrPatr (lang)
	1,237: 7.5cm, HL/B (lang)
	99: 7.5cm, HL/B (kurz)
	39: 7.5cm, PzGrPatr (kurz)
	5,700: 5cm, SprGrPatr (lang)
	2,845: 5cm, PzGrPatr (*lang*)
	219,140: 7.92mm, Machine-gun bullets

Reports containing similar data were not rare. In 1943/44, the *Panzertruppe* was apparently able to compensate for their lack of numbers and (alleged) overall inferiority. Even when facing superior numbers of enemy forces, they fought using superior tactics or by concentrated direct assaults. However, the battlefront proved to be too wide and fragmented for them to defend with limited resources.

Below:
This PzKpfw IV Ausf G of an unidentified unit moves through a snow-clad landscape during the third winter on the *Ostfront* (east front). The tank is still armed with the 7.5cm KwK L/43 main gun, and has a full set of *Panzerschürzen* (side skirts) also *Winterketten*, (winter tracks) which improved mobility on soft ground and snow. Note: German transport units relied on *Kamerad Pferd* (comrade horse) until the end of hostilities. (Bundesarchiv)





CHAPTER 6

FINALE IN ITALY: A SLOW RETREAT

The surrender by German forces at Stalingrad in January 1943, and the subsequent capitulation in May of all Axis forces in Tunisia, proved that Hitler's war machine was not invincible.

One of the lessons they learnt, in the early of the war, was that fast-moving tank formations were vital to the success of an invasion. The campaigns spearheaded by the *Panzerwaffe* in Poland, France and the Balkans had shown German tank tactics to be superior to the forces of those countries and also to those employed by the British involved in the defence of France.

Allied forces proved to be equal to this challenge, to a much greater extent than the Soviets, and won the war in the deserts of North Africa by having numerical superiority and efficient logistics to keep front-line forces adequately supplied. After the loss of Tunisia, the German high command made a serious attempt to halt the landing by Allied forces (Operation Husky) in Sicily.

In spring 1943, the 2./s PzAbt 504 equipped with Tigers was waiting to be transported to Tunisia. The surrender made this impossible, and the unit was subsequently reorganized to the latest structures.

PzDiv Hermann Göring, an elite unit, was established at the beginning of 1942. Initially it was organized with two tank battalions in accordance to the 1942-type structures with two light and one medium tank company. In June 1943, the division was transferred to Italy, and reinforced with a third PzStuGAbt.

It was further reinforced with two PzGrenDiv, both having strong tank detachments: 15.PzGrenDiv was reinforced by PzAbt 215 (three medium

Left:
A PzKpfw IV Ausf G of 1.SS-PzDiv Liebstandarte Adolf Hitler fitted with 30mm bolt-on frontal armour and a complete set of *Panzerschürzen*; side armour plates. A *Fliegerbeschussgerät* anti-aircraft mounting carrying a *Maschinengewehr* (MG) 34 is fitted to the commander's cupola. In the summer of 1943, the division was part of the force deployed to oversee the disarming of Italian army units which remained in German held territory. (NARA)

tank companies), and 29.PzGrenDiv by PzAbt 129 with four StuGKp. As detailed in *Panzerlage* reports, the total tank strength in Italy was 230 tanks (*Panzerwaffe* only; sources of the reports differ. The only *Sturmartillerie* unit available, StuGAbt 242, had a further 37 operational *Sturmgeschütz*).

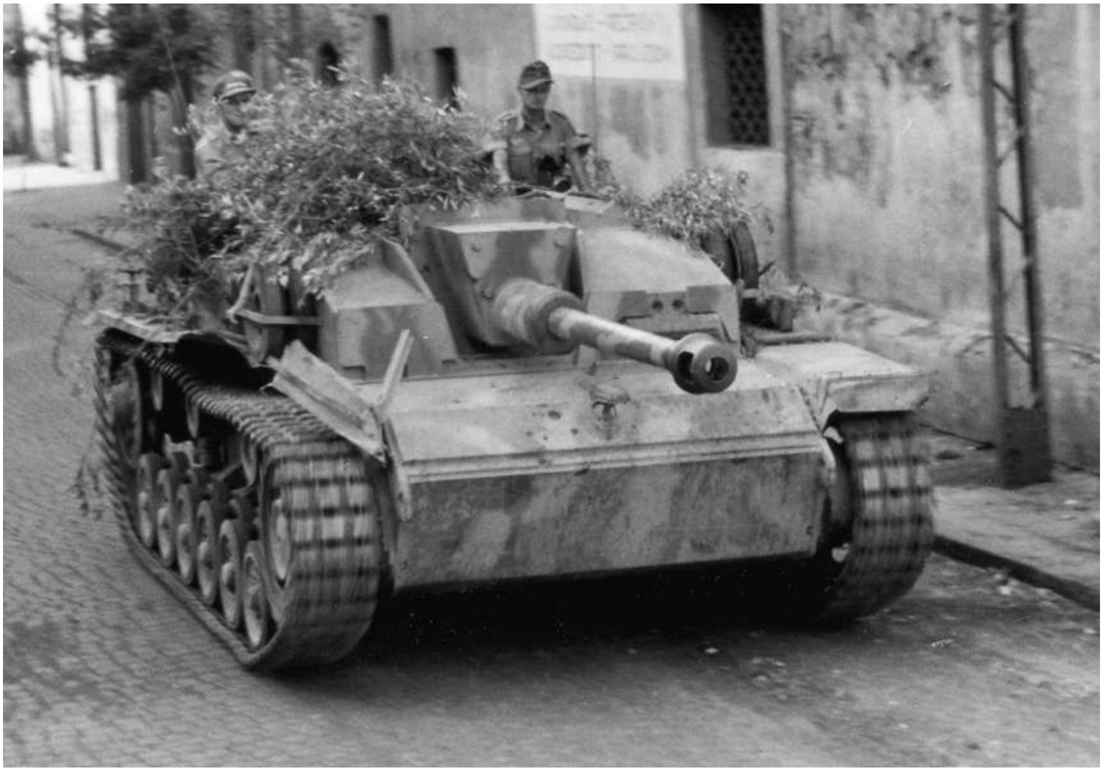
Panzerlage Südwest (tank strength southwest), July 1943

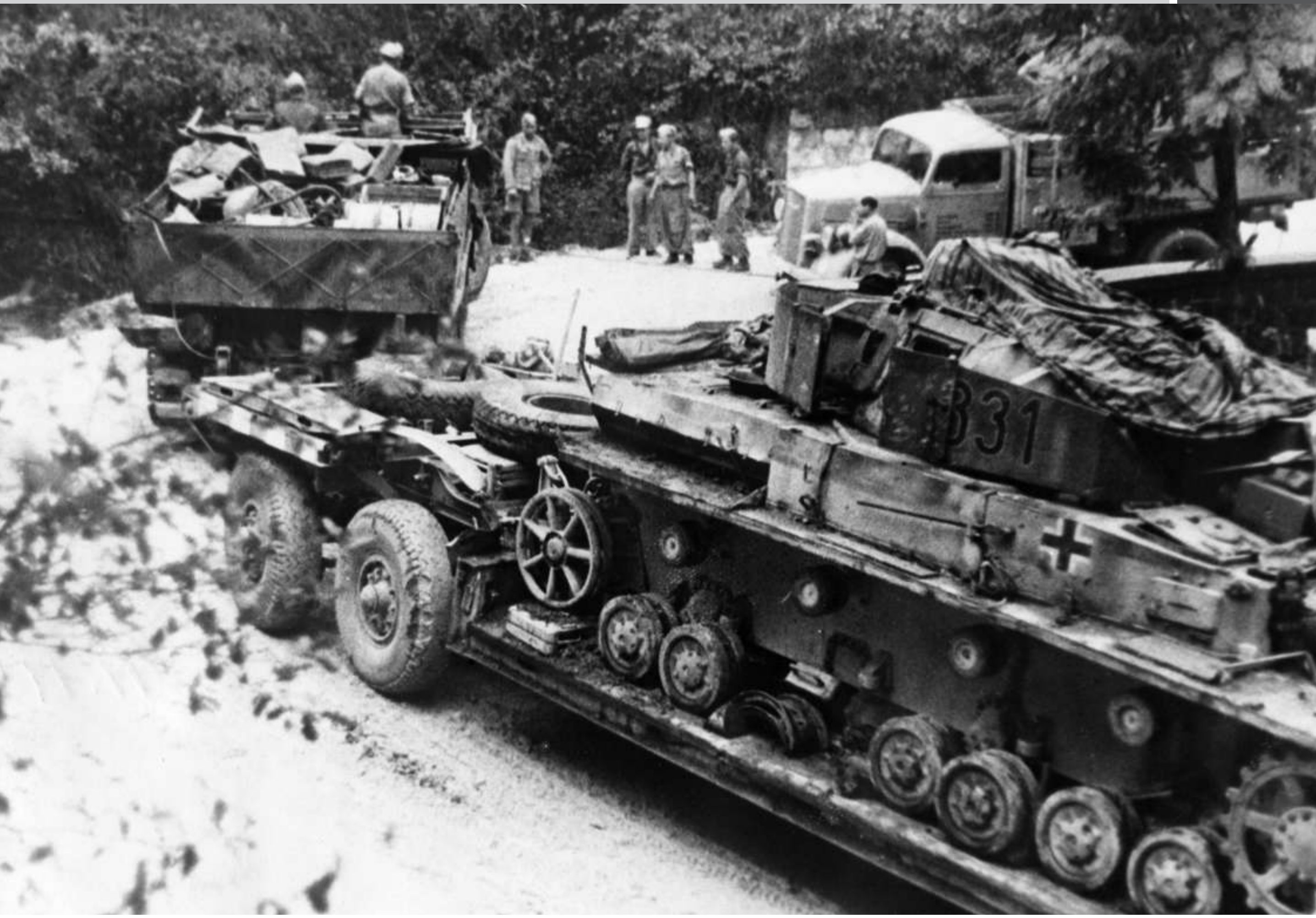
PzKpfw III (lang)	PzKpfw III (7.5cm)	StuG III (lang)	PzKpfw Tiger	PzBefWg Command tanks	**Total**
49	3	72	78	11	**230**

Although the invasion had been expected by German high command, the establishment of a second front in Europe was to have a significant impact on the course of the war. It became imperative for German military planners to dispatch reinforcements to Italy; and many of these were to be sent from Russia and this forced the Germans to abandon their hapless offensive on the Kursk salient.

The Allies landed a powerful force which would have over 500 tanks by the time the operation ended, and also a plentiful supply of replacements.

Below:
A StuG Ausf F/8 in service with the PzDiv Hermann Göring, an elite *Luftwaffe* unit, during the defence of Sicily. Although the division had a strong *Sturmgeschütz* detachment, the type proved to be of limited value when fighting through the narrow roads on the island. (Anderson)





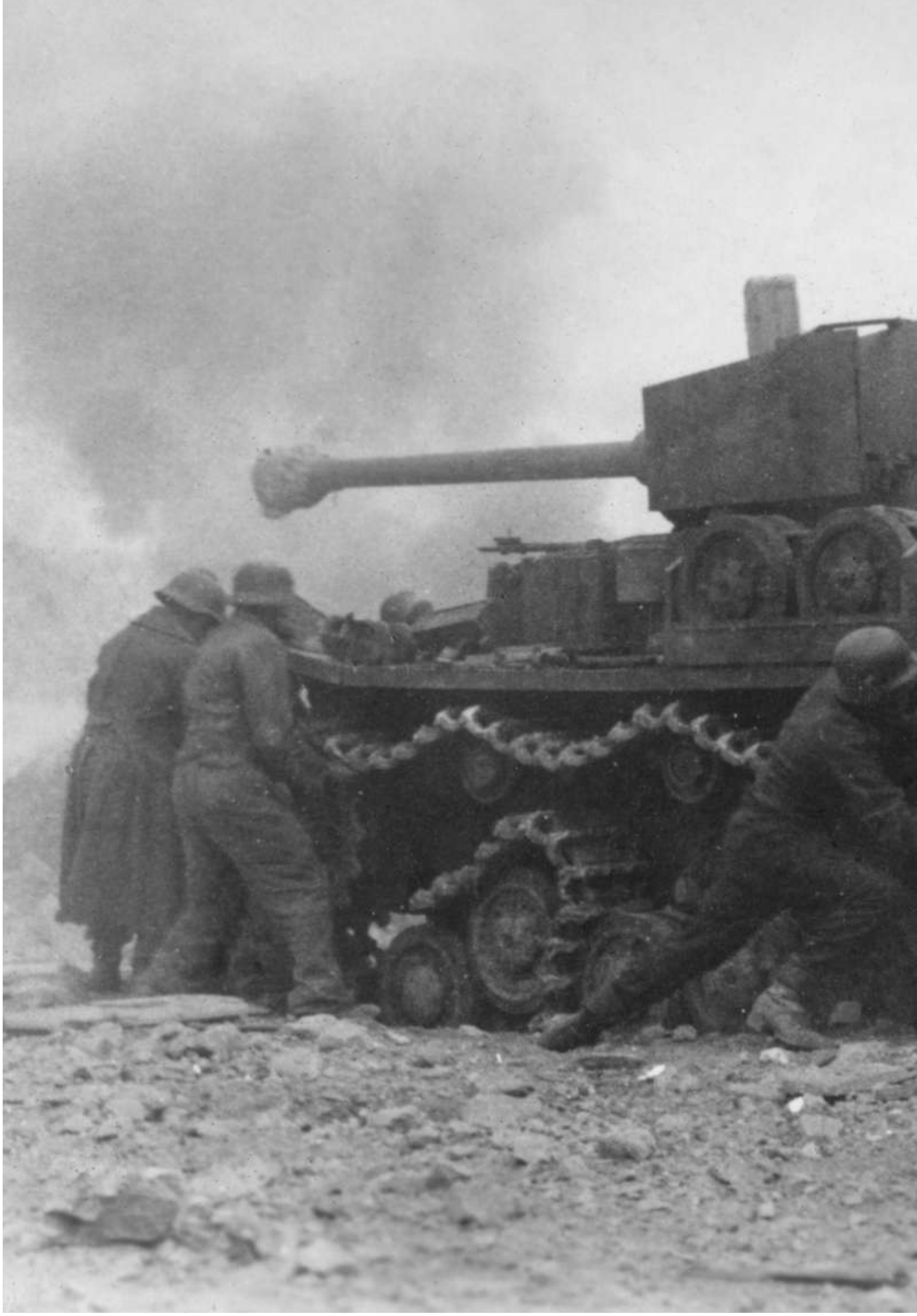
Axis forces on the island were quickly overwhelmed, and Palermo was taken on 22 July. However, an allied advance into the northeast was hindered by difficult terrain and the dogged resistance by Axis troops. Messina was held until 17 August, but a significant number of the German defenders were able to cross to the Italian mainland. *Unternehmen Lehrgang* (Operation Training Course), the return operation, was covered by a *FlaK-Glocke* (anti-aircraft 'bell' or 'umbrella') over Messina by 22.FlaK-Brigade. The massed anti-aircraft guns of the brigade and supporting units, included 65 heavy positions, claimed to have shot down 170 enemy aircraft.

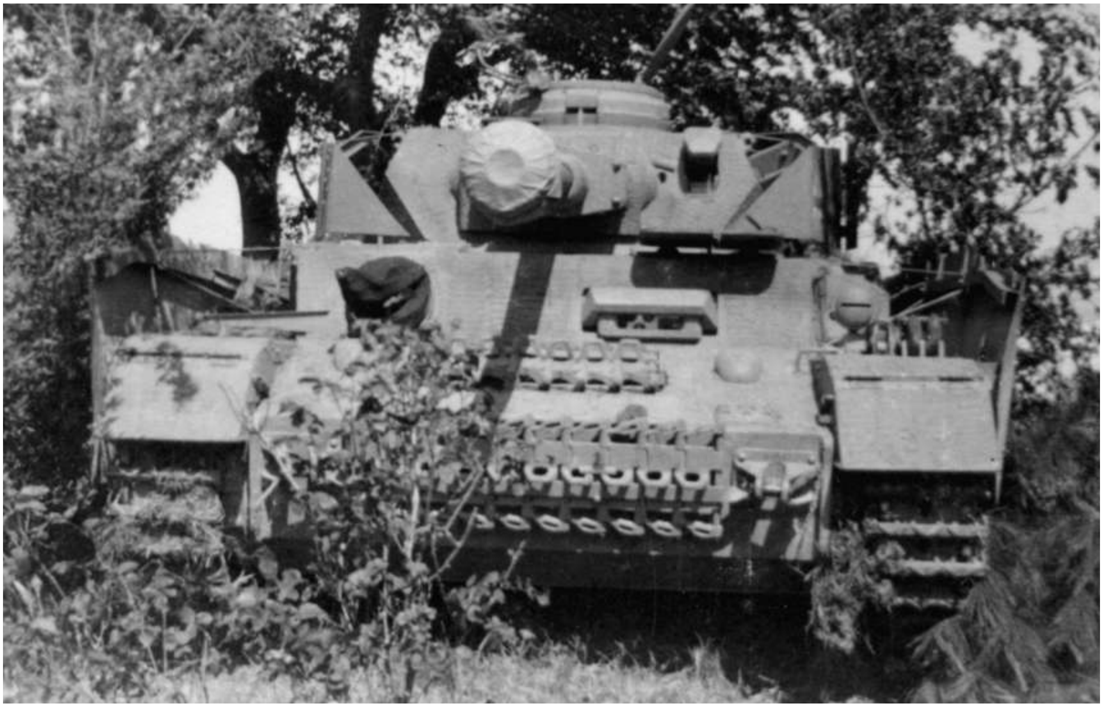
During the fighting, German tank commanders awoke to the menace of a new deadly weapon used by the enemy: a new US anti-tank weapon is mentioned in an after action report from 29.PzGrenDiv.

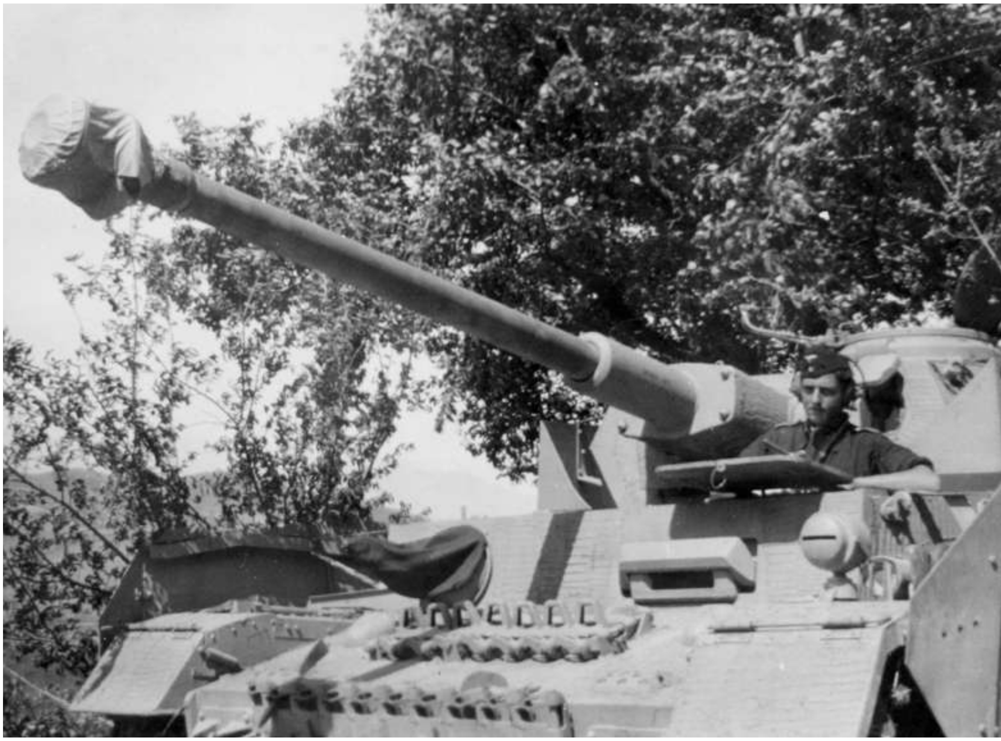
Above:
A *schwere Zugkraftwagen* (s ZgKw) 18t (SdKfz 9) heavy halftrack towing a *Sonderanhänger* (SdAnh) 116 *Tiefladeanhänger* (flatbed trailer) carrying a damaged PzKpfw IV Ausf H has been halted by a sharp turn on a mountain road: A common occurrence in Sicily and Italy. (Getty)

> The performance of the "Bazooka" (anti-tank weapon M1) is considerable. It weighs 5kg, fires a 5.9cm shell, and has sight settings for 90, 180, 270 and

Right:
A PzKpfw IV from PzDiv Hermann Göring has shed a track during the battle for Monte Casino in 1944. If no field engineers were in the vicinity, then the crew had to attempt to rectify the problem often under fire from the enemy. Note, at this time PzDiv Hermann Göring was using a white star emblem. (Getty)







Above:
German tank forces fighting in Italy found it vitally important to use camouflage to conceal their tanks against air attacks. The crew of this PzKpfw IV Ausf H, from PzDiv Hermann Göring, has used the cover of a tree to effectively hide the position of their vehicle. (Anderson)

Right:
A thin coat of Zimmerit, anti-magnetic paste, has been applied to this PzKpfw IV Ausf H mounting a 7.5cm KwK L/48 gun. The *Langrohr* (long-barrel) gun could easily defeat a US-built M4 Sherman. (Anderson)

Above:
A column of Borgward B IV, remotely-controlled demolition-charge carriers, from PzAbt (Fkl) 301 advances to the frontline near Nettuno. The unit was sent to Italy in early 1944 as part of PzRgt 69, but was of limited use due to conditions on the battlefront. (Anderson)

> 360m. We tested the weapon; with the sight fixed at 90m, we aimed at a plate measuring two by two metres and fired 20 shots and achieved 20 hits. It could penetrate 80mm (maximum) armour at 60° angle of impact.

These few lines note that a PzKpfw IV and a *Sturmgeschütz* could be easily damaged or destroyed by this portable anti-tank weapon. This had a limiting factor on how and where the Germans would use their tanks.

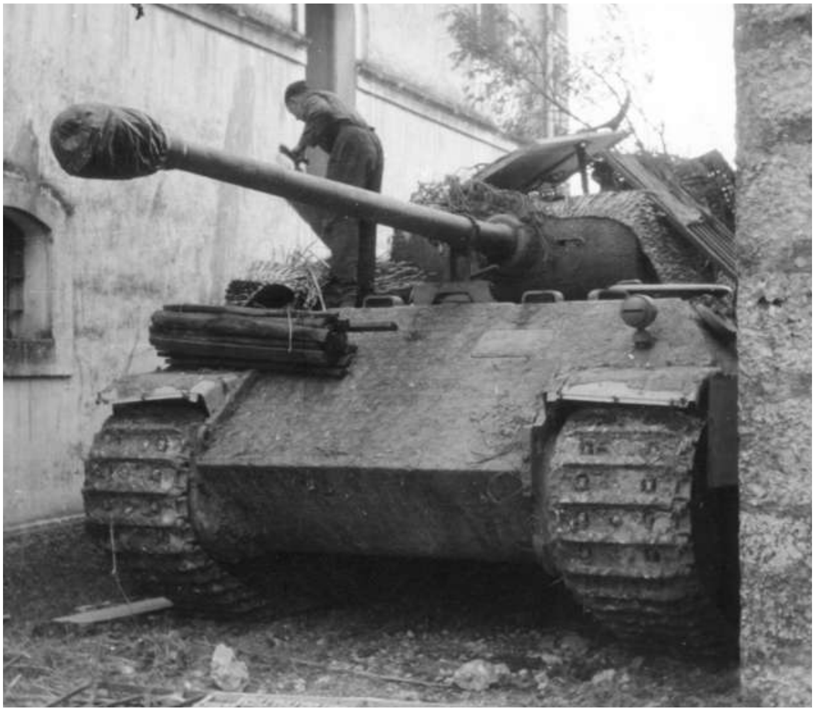
Allied air superiority was another problem to be faced. The report carries on:

> Combat against *Jagdbomber* and *Tiefflieger* (strafing aircraft) has to be conducted by any armed trooper, not only by 2cm FlaK guns. The troop has to be ordered to open fire on enemy aircraft on all any occasions.
> In the immediate vicinity of staff sections, artillery positions and assembly areas, anti-aircraft protection has to be established by one platoon of 2cm FlaK supported by two to three light machine guns. The lead machine gunner will open fire with tracers, as a guide for the rest of the guns.

The report continues on personnel and equipment:

> It is our fifth year of fighting in this war, and the lack of experienced leaders and well-trained troops is noticeable, replacements are of mediocre quality. Despite these shortcomings, the German soldier is still

Right:
September 1943: US forces pass a damaged PzKpfw IV on the main route into the city of Salerno while a recovery team inspects the tank. Although the spatial armour around the turret is intact, parts of the *Panzerschürzen* are missing. (Getty)



Right:
A PzKpfw V Panther of PzRgt 4 has been parked in between houses and thoroughly camouflaged. The type was considered to be superior to all Allied tanks, but this was never truly proven due to the conditions found on the Italian battlefield – the marshes of the lowlands and narrow roads in mountain regions. Note the tank carries a fascine (a bundle of wooden poles); very necessary when operating over the marshy terrain around Nettuno. (Bundesarchiv)

> superior to the enemy… The mountain war in Sicily set new challenges. However, many problems occurred; some serious some seemingly trivial… The combat uniform proved absolutely unsuitable, the material wore through very quickly and ripped easily.

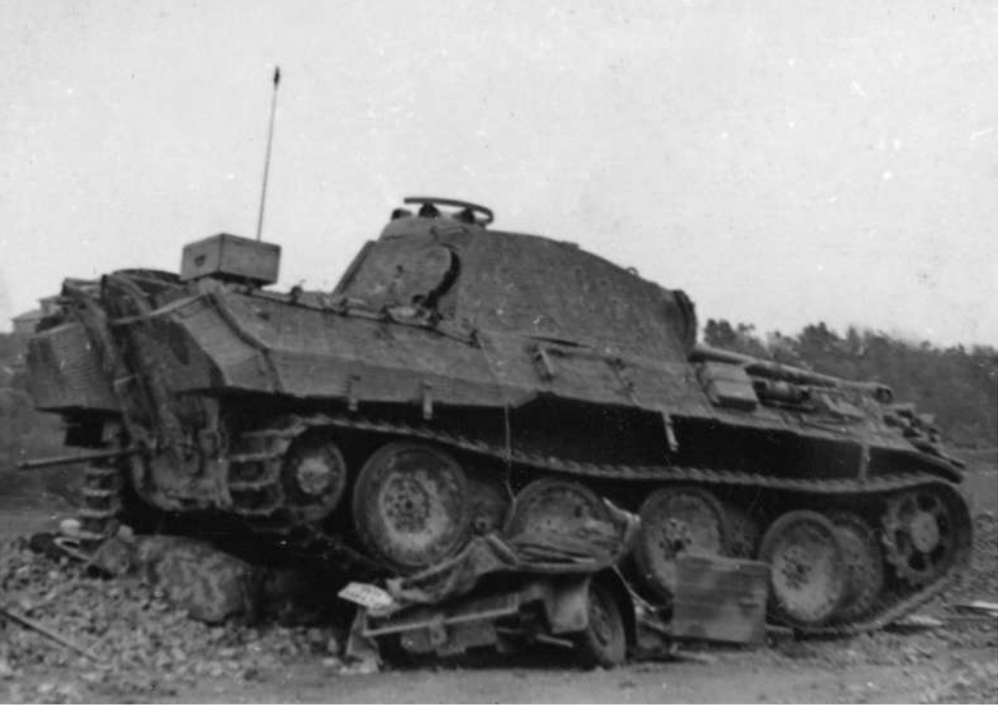
The report continued and placed emphasis on the high quality of US equipment, from rubber soled boots which allowed quiet movement to hand-held portable radios (possibly SCR-300).

After the loss of Sicily, the German high command ordered more units to Italy, and by August some 770 tanks were operational the country.

Panzerlage Südwest (tank strength southwest), August 1943

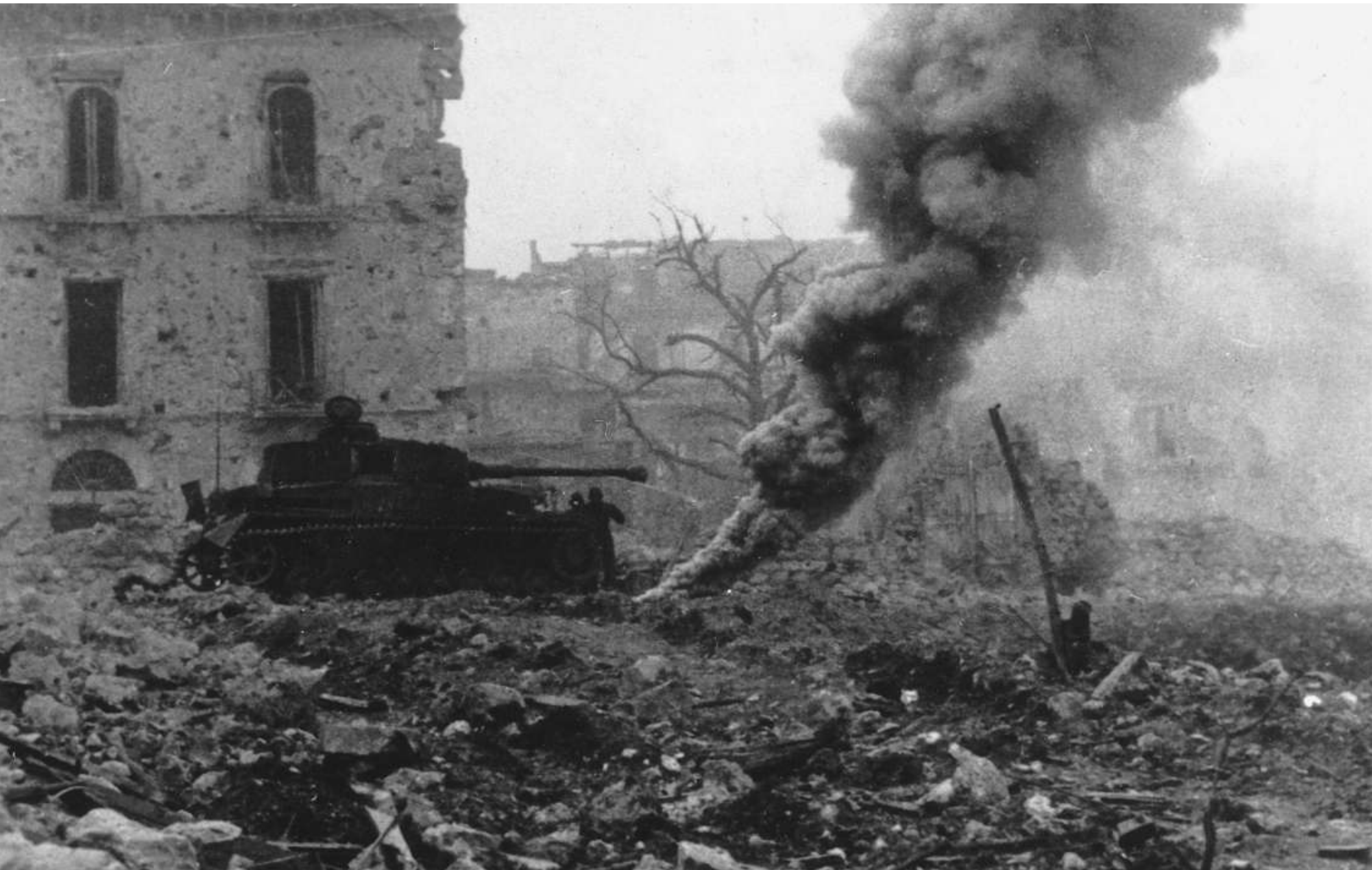
PzKpfw II	PzKpfw III (lang)	PzKpfw III (7.5)	PzKpfw III (Flamm)	StuG III	PzKpfw IV (kurz)	PzKpfw IV (lang)	PzKpfw Panther	PzKpfw Tiger	PzBefWg Command	**Total**
4	28	39	35	184	17	318	71	27	90	**773**

When the Allied forces landed in the south of Calabria, the new Italian government negotiated a ceasefire, thus affectively leaving the Axis. At that time, PzDiv Hermann Göring, supported by 15.PzGrenDiv and 29.PzGrenDiv which were reinforced by 16.PzDiv and 26.PzDiv, were fighting Allied forces. Further units were stationed in central and northern

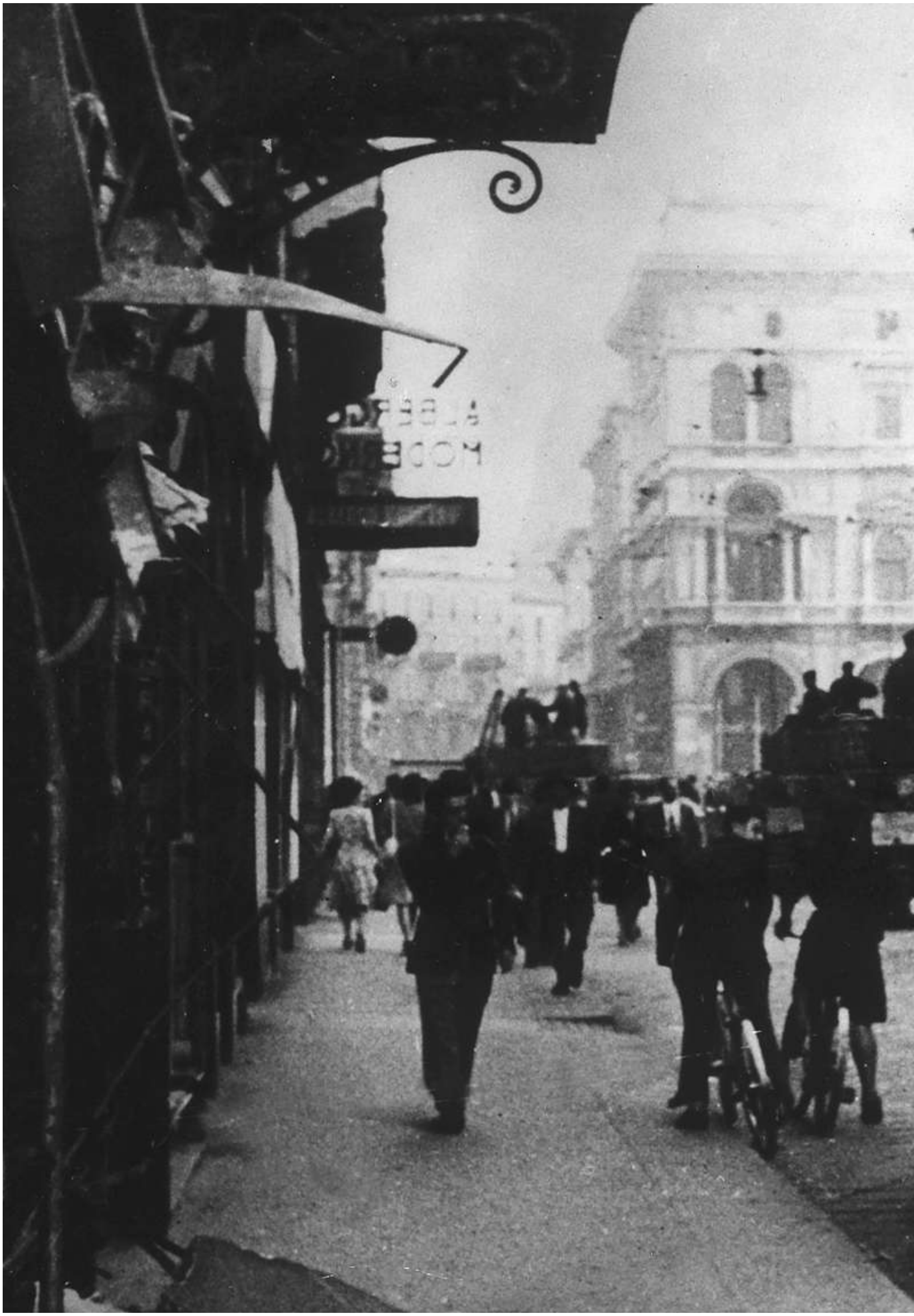


Left:
A PzKpfw V Panther has suffered damage to left-hand track during the fighting around Aprilia, south of Rome. The driver then lost control causing the tank to veer to the right before crushing a VW *Kübelwagen*. (Anderson)

Below:
A damaged PzKpfw IV lies abandoned in the ruins of Monte Cassino. The crew has ignited a smoke candle to provide cover for engineers to repair or recover the tank. (Getty)



Right:
A PzKpfw IV of 1.SS-PzDiv Leibstandarte Adolf Hitler in the city of Milan; although Italy had surrendered in September 1943, German forces continued to occupy the north of the country. By April 1945, the US 1st Armored Division had advanced close to the city, but had no need to attack as Italian resistance fighters had already seized Milan. (Getty)



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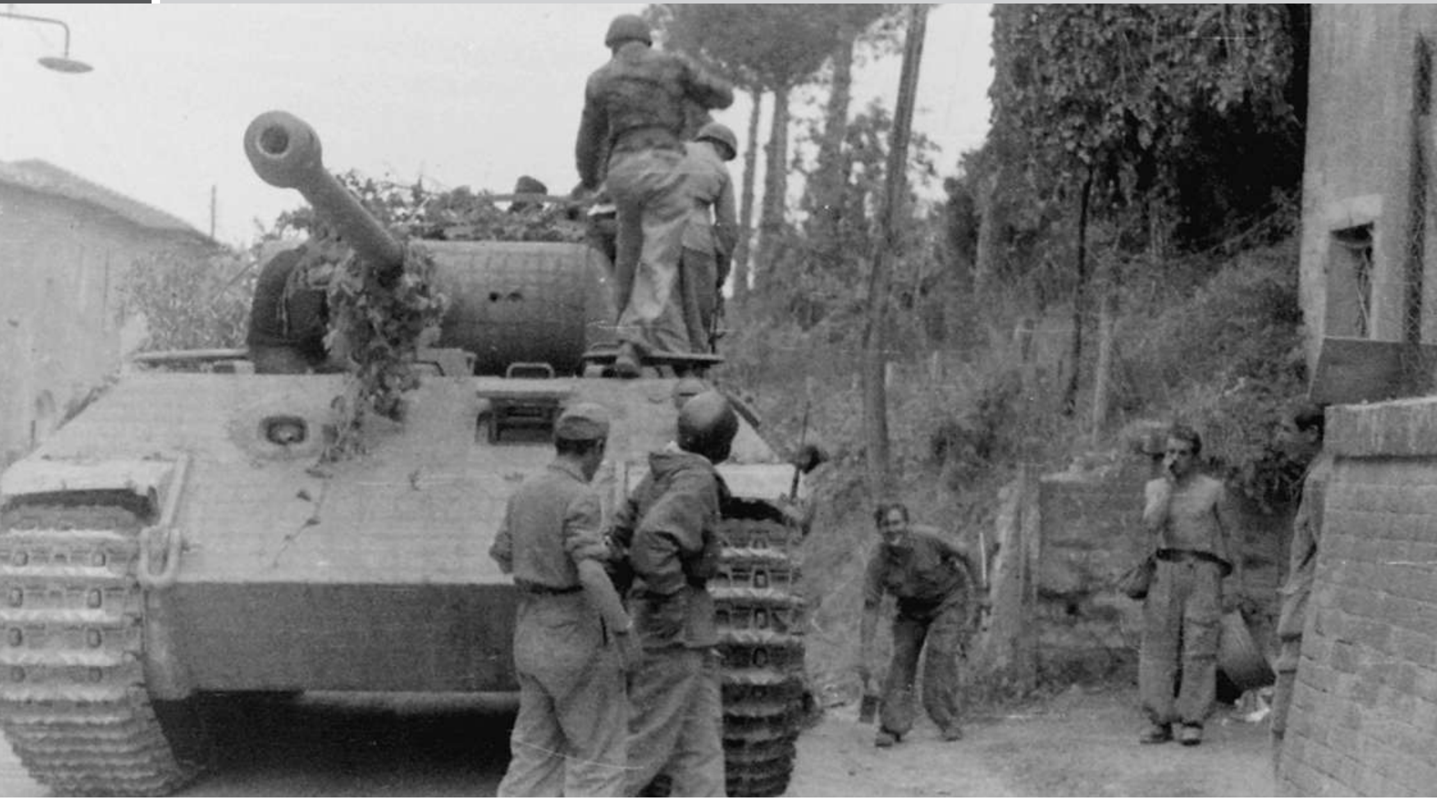


Above:
A PzKpfw V Panther Ausf A of PzRgt 4, armed with the 7.5cm KwK 42 L/70, parked in a village close to the Nettuno bridgehead. On the battlefront, the high-velocity main gun could defeat any Allied tank at very long range, while the crew was protected by almost impenetrable sloped frontal armour. However, commanders were required to exercise great caution before deploying the type in battle. (Anderson)

Italy; 24.PzDiv and 1.SS PzDiv Liebstandarte Adolf Hitler were involved in disarming elements of the Italian army, now that a truce was in place. However, both of these powerful units were to be transferred back to Russia in September/October.

The Allied advance proceeded at slow pace, hindered by a dogged defence put up by Germans who made excellent use the difficult terrain.

In August 1943, Guderian had sent a liaison officer to visit tank units stationed in Italy. The unknown officer submitted a telling report:

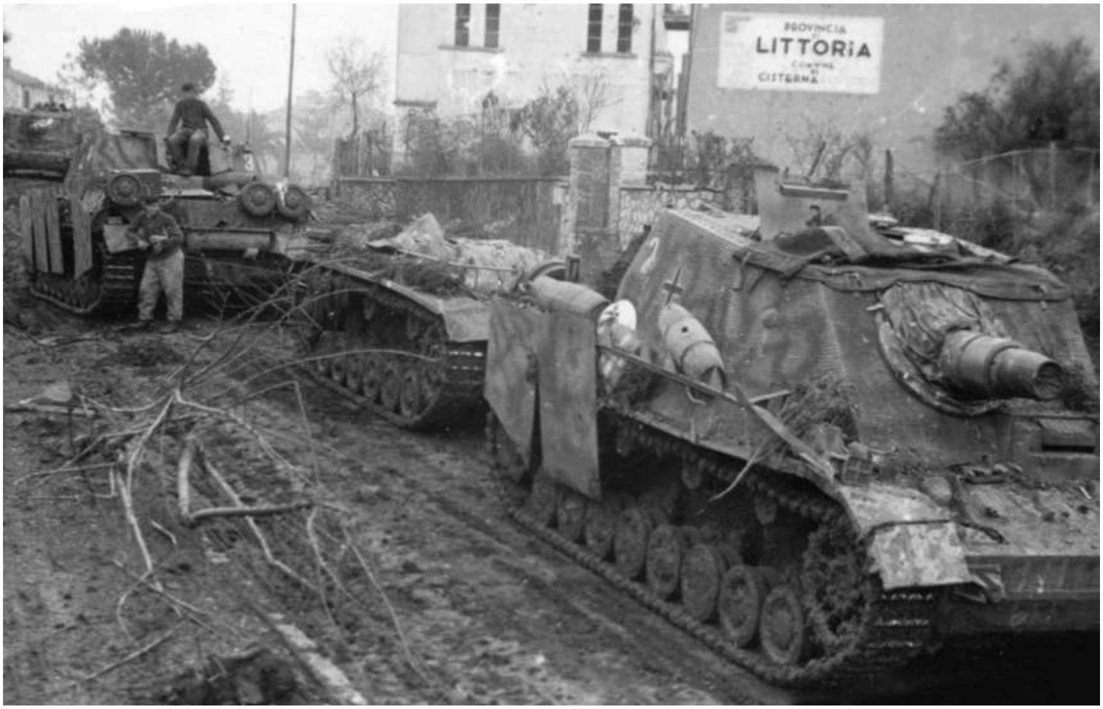
> Since the visited units are distributed widely over northern, central and southern Italy, I was able to get a good overview about the terrain and road conditions during my journeys. In all events, a commitment by tank units seems to be possible only in northern Italy. In central and south parts of the country only the few flat areas seem to be suitable. Any application of tanks in mountainous regions, such as the Appenines, seems to be almost impossible. Road and terrain conditions cause great problems for the long-distance transfer of tracked vehicles from one coast to the other. While the roads are of good quality, most are very narrow and wind their way up and down in serpentine fashion. These conditions cause serious wear and tear to the running wheels, brakes and also steering components fail. The high temperatures cause engines to overheat. It is my opinion, that the Tiger cannot be used in central or southern

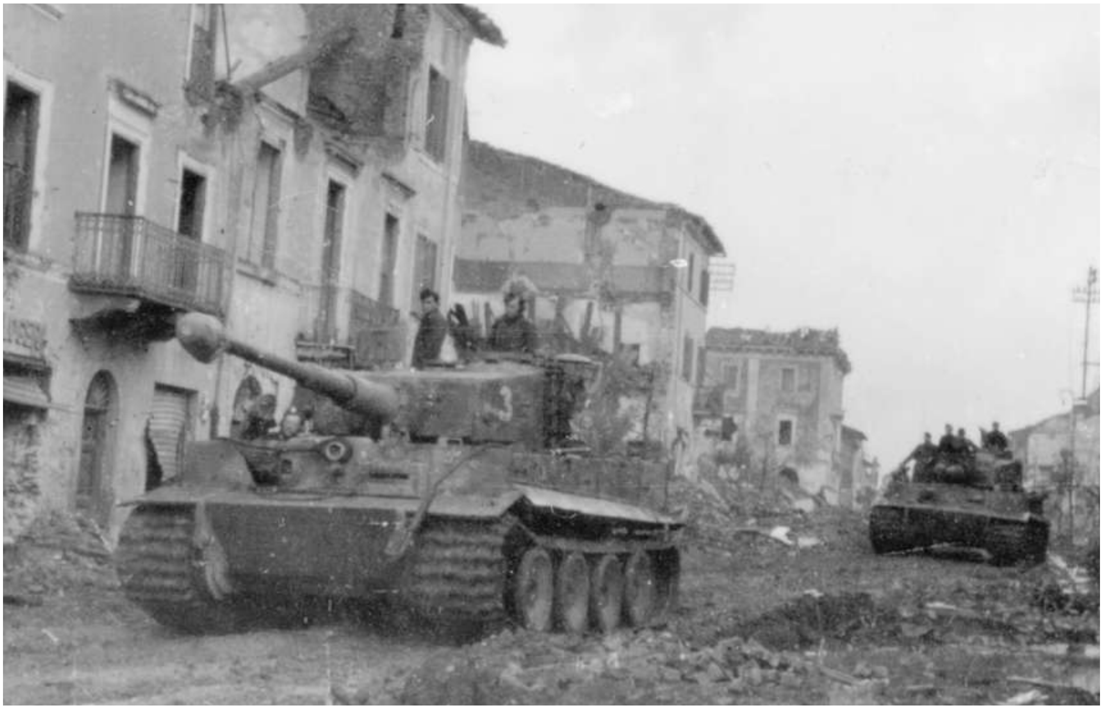
> Italy. Even in the Po Valley in upper Italy, the many canals and water systems are a great hindrance. I came to the conclusion that for a commitment in Italy only a relatively light and agile tank would be appropriate.

His conclusion that a different type of tank was required is echoed in many other reports. However, forced by the developments in the east, German tank designers had proceeded in the opposite direction. The most important and most numerous tanks, PzKpfw IV and *Sturmgeschütz*, were felt to be near the end of their battle-front life. The new Tiger and Panther tanks were far too heavy for a successful commitment in Italy. Although the ultra-heavy *Sturmgeschütz Elefant* (Ferdinand) and the *Sturmpanzer* sent to Italy in early 1944, both types were totally unsuited to the terrain over which they were expected to operate.

By making a slow (strategic) retreat the Germans allowed themselves time to establish a line of fortified positions north of Naples; the Gustav-Line. Here the Allied advance halted over the winter of 1943/44, and attacks fromthe bridgeheads at Anzio and Nettuno, to the rear of the Gustav-Line, were not successful. In March 1944, the Germans transferred an interesting formation to destroy this bridgehead; PzRgt 69 a specialist headquarters unit, commanding four subunits, I./PzRgt 4 with 76 Panther, and StuPzAbt 216 with 57 *Sturmpanzer*, also s PzAbt 508 with 45 Tiger and I./s PzJgAbt 653 with 11 *Elefant* (Ferdinand) heavy tank destroyers. Finally a combat

Below:
In early 1944, StuPzAbt 216 was sent to Italy as part of PzRgt 69 to join forces attempting to prevent Allied forces breaking out from the Nettuno bridgehead. Shown are three *Sturmpanzer* and a *Munitionpanzer* III (ammunition carrier) from the unit. (Historyfacts)





Above:
Two PzKpfw VI Tigers of s PzAbt 504 move through the rubble of a battered Italian town. The lead tank is fitted with a late-type commander´s cupola which was designed to give increased protection against fire from weapons such as the anti-tank rifle.

Right:
At the time of Operation Husky (the Allied landings on Sicily) in July 1943, s PzAbt 504 reported that it had 17 PzKpfw VI Tiger Ausf E operational. After 16 had been lost, the surviving tank and the battalion were evacuated to mainland Italy before being sent to The Netherlands for re-establishment. (Bundesarchiv)

Above:
Part of PzRgt 69, the large force sent to stop Allied forces breaking out from Nettuno, was s PzAbt 508 equipped with PzKpfw VI Tiger tanks. Although all units were linked by radio, a dispatch rider was often thought of as being the most reliable way of sending an important message. (NARA)

support unit, PzAbt (Fkl) 301 with 29 StuG III and 108 remote-controlled demolition charge carriers was added.

However, the commitment of these heavy tanks raised a number of problems, as noted in a report by *Oberstleutnant* Rohrbeck, tank officer at GenStdH:

> 3.) Tanks, self-propelled guns and *Sondergerät* (special purpose weapons): The area south of Aprilia [near Rome] is not suited for the deployment of tanks. After a long advance travelling on gravel roads, followed by combat in heavy wet terrain led to a considerable number of failures to our armoured vehicles.
>
> Many tanks with damaged tracks or with brake and transmission failures lay around the rear area. Here they block the roads, as there are no alternative routes available. If a tank was able to reach the front, it was soon hit by the enemy. Example: On 17 February, of the five Panthers deployed with 3. PzGrenDiv, four were destroyed or suffered mechanical failures after just three hours.
>
> The commitment of the B IV and Goliath (demolition charge carriers) did never prove to be effective due to terrain problems and the very special technical nature of their guidance equipment.
>
> The troop rejects all self-propelled guns because of their high rate of technical failure, and prefers vehicle-drawn guns. Example: On 19 February, 29.

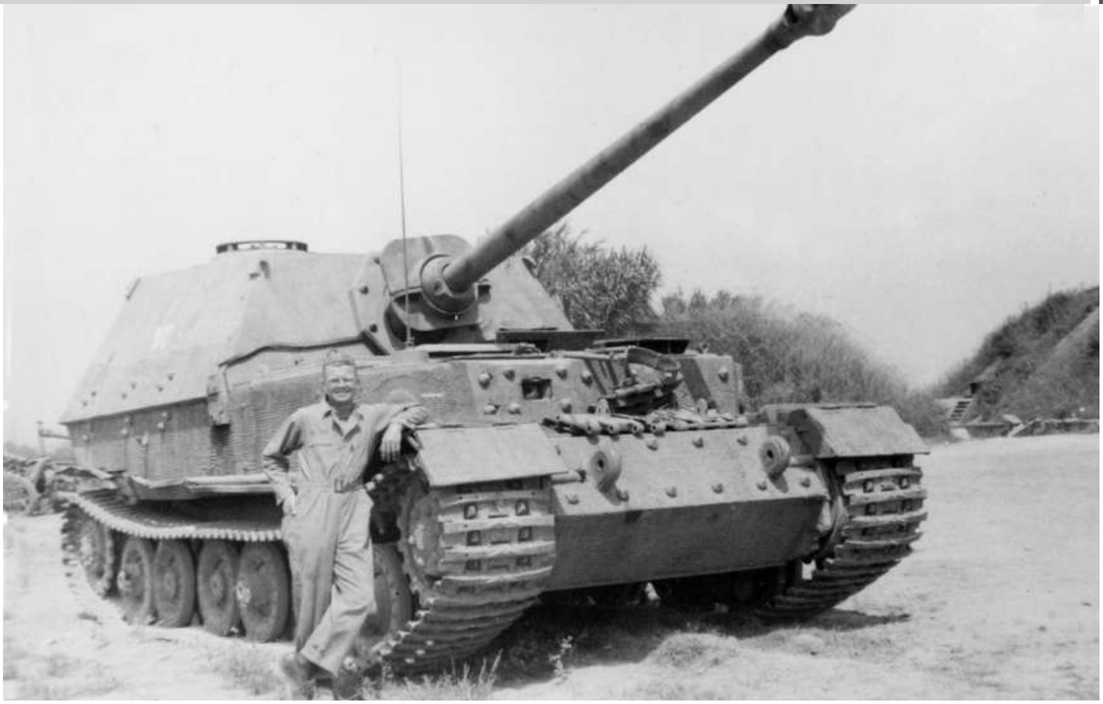
> PzGrenDiv reported only five le Fh 18, on PzKpfw II (*Wespe*), operational from the 18 issued.

However, on 7 March 1944, the commander of 1./s PzJgAbt 653 noted in his strength report:

> Quality of training: Very good.
>
> Troop morale: Very good.
>
> Mobility: During the fighting at Nettuno the Ferdinands were difficult to manoeuvre over the soft ground. We can use only paved roads or firm tracks.
>
> Special problems: The terrain was not always suitable for heavy armour.
>
> Combat value: Excellent, especially against tanks and anti-tank weapons.

A more senior officer added a comment:

Below:
US infantry sprint past a burning PzKpfw VI Tiger Ausf E. The tank appears have been hit in the engine compartment by fire from a 75 mm gun which, at close range, was effective enough to stop this heavily-armoured opponent. (NARA)



Above:
The *Elefant* (Ferdinand) was the heaviest armoured vehicle used for combat in Italy. The 1st *schweres Panzerjäger-Abteilung* (1./s PzJgAbt 653 – heavy tank hunter battalion) was sent to Nettuno, as part of PzRgt 69, where it lost the majority of its vehicles. In August 1944, the surviving two *Elefants* were sent back to the main unit in Russia. Note the vehicle shown, '102', was captured by Allied forces and sent to the US for evaluation. (Anderson)

> The company has proved its efficiency during the short period of combat. The only losses of the well-armoured vehicles arose from an unreliable electric system.

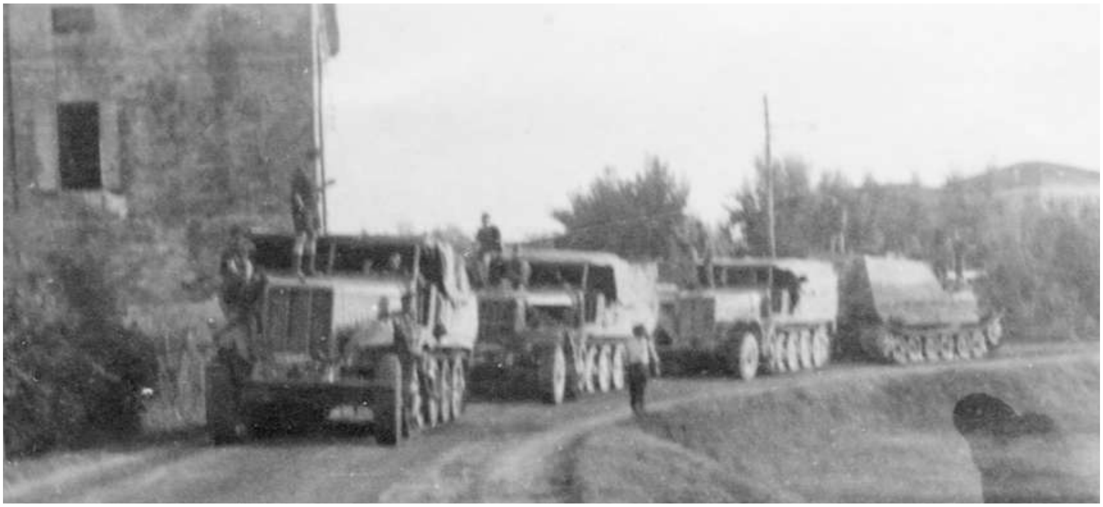
A month later, the commander of 1./s PzJgAbt 653 reported that all Ferdinands had either been destroyed or had failed. In his statement he again emphasized the many problems; other than the terrain, mines laid by the enemy easily destroyed the tracks and the delicate drive system. Another was the lack of special spare parts and the extraordinary length of time spent on repairs and maintenance.

In July the unit began to retreat, but only two of the 14 Ferdinands (*Elefant*) issued were noted as being operational. Higher command echelons now began calling the heavy tank destroyer by its new name:

> The *Elefants* are absolutely unfit for combat in mountainous terrain…

Sturmpanzer-Abteilung 216 and PzAbt 301 (Fkl) submitted similar entries, noting that the soft terrain impeded any effective operations against the Nettuno bridgehead. The complex demolition carriers did not operate properly, and spare parts were, as always, insufficient or just not available.

It is not surprising that the *Panzerwaffe* lost far more tanks due to 'homemade' problems than to enemy action. During the retreat, any tanks that failed had to be blown up by German pioneers.



Above:
IThree *schwere Zugkraftwagen* (s ZgKw) 18t (SdKfz 9) heavy halftracks are required to haul this broken down *Elefant* from 1./s PzJgAbt 653. The terrain around Nettuno was unsuitable for the commitment of heavy tanks, particularly the *Elefant* due to its weight and delicate (unreliable) drive system. (Anderson)

Retreat to the north

The Battle of Monte Cassino ended on 18 May 1944, and with it came a vital break in the Gustav Line. Allied units began their advance and after linking up with the main force from the Nettuno bridgehead, continued north towards Rome. (It was subsequently declared an open city to avoid destruction.)

The commander-in chief of the German army in Italy, *Generalfeldmarschall* Albert Kesselring, decided to withdraw his forces as pressure on the Gustav Line increased.

The Allied advance although temporarily halted by quickly-established defensive lines, was stopped by the strongly-fortified *Gotenstellung* (Gothic Line). The many hopes of Allied commanders for an early victory in Italy were dashed.

Panzerlage Südwest **(tank strength southwest) 15 June 1944**

	PzKpfw II	SPzKpfw III	PzKpfw IV	PzKpfw Panther	PzKpfw Tiger	StuG III	
Operational	2	85	210	54	81	341	**771**
Under repair	2	27	62	16	9	111	
To be issued		29	102	38	33	62	

Panzerlage Südwest **(tank strength southwest) 5 April 1945**

	PzKpfw III	PzKpfw IV	Panzer IV lang (L/70)	PzKpfw Panther	PzKpfw Tiger	StuG III	StuH	StuG IV	JagdPz 38	Beute StuG (captured)	
Operational	50	127	8	24	35	115	38	16	60	141	**614**
Under repair	2	4		1	1	11	3		8	23	

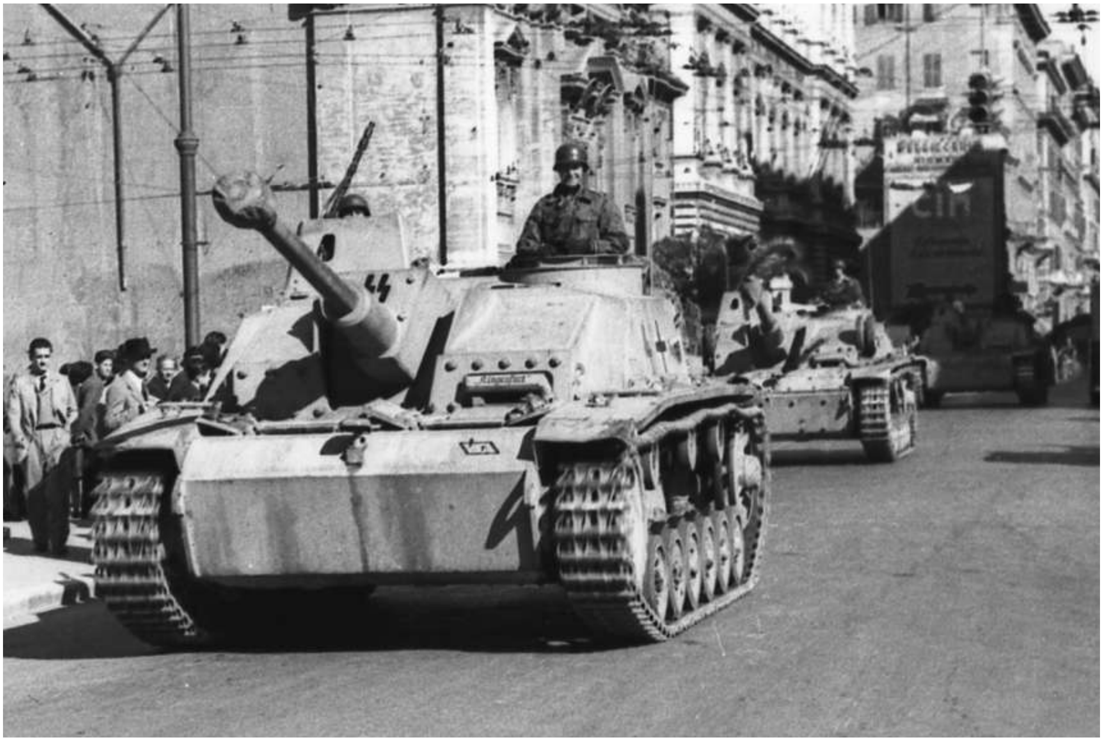
The commander of *Sturmpanzer-Abteilung* 216 continued to submit his monthly strength reports until the end of hostilities. In March 1945, he reported that 39 of his 45 *Sturmpanzer* and one PzKpfw II remained operational, and despaired at the almost non-existent supply of spare parts, in particular components for the final drive. He also noted that the nose-heavy *Sturmpanzer* could not even complete a transfer march over paved roads without suffering serious mechanical damage. The commander also noted the shortage of fuel and decided to order the use of horse-drawn transport to save this precious commodity for combat operations. This decision was greeted with some incomprehension by his superiors.

However, this is quite understandable as the spare parts had to be collected from supply depots some 600km to the north of their position.

In April 1945, there was still a considerable German tank force in Italy. The *Panzerlage Südwest* detailed a total of 614 tanks including *Sturmgeschütz*. It is surprising to note, there were more Tigers available than there were Panthers. As on all other fronts, *Sturmgeschütz* (including *Hetzer* and Panzer IV/70) clearly outnumbered the PzKpfw IV. A total of 140 captured Italian assault guns were included in the *Panzerlage*.

Allied forces did not launch any major attacks against the *Gotenstellung* and it remained virtually intact until British and US forces were finally victorious in April 1945.

Below:
In June 1944, 16.SS-PZGrenDiv *Reichsführer*-SS, which had only assault guns in its tank battalion, was transferred to Italy. A column of *Sturmgeschütz* Ausf G from the unit parade through Rome: Note the 'SS' runic symbols clearly painted on the gun mantlet and, for an unknown reason, the name of the German city Klagenfurt has been painted on the driver's armoured visor. (PeKo)



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CHAPTER 7

D-DAY: DEFEAT IN THE WEST

In August 1943, the chief of *Organisationsabteilung* made a journey to the eastern front, and he visited *Heeresgruppe Mitte* (Army Group Centre) and 4.Army in particular. His purpose was to evaluate the situation of German units after the cancellation of *Unternehmen Zitadelle* (Operation Citadel) and especially the disposition of the *Panzerwaffe*.

Due to the situation in Italy, high command was forced to transfer a number of units to reinforce German troops fighting to halt the Allied invasion. However, the Soviets were able to mobilize and equip fresh units and these were used to launch heavy assaults against *Heeresgruppe Mitte* and *Heeresgruppe Süd* (Army Group South). For example, the German forces at Kirov were only able to defend in company strength against an attack by a Soviet regiment.

The *Organisationsabteilung* came to the conclusion that, independent from the army groups, the remaining units had to be merged to establish an improvised defensive force for the threatened front:

> III. Organizational questions:
>
> a) *Kampfgruppen* (combat groups) of infantry and Panzer divisions.
> All authorities, from the general command to the army group are encouraged to either merge all residual divisions into *Kampfgruppen* or disband them. The weakened divisions, tank units without tanks, anti-tank units without any guns, can only contribute some 500 to 800 soldiers on average. Artillery elements, however, are mostly intact and operational.

Left:
PzKpfw VI Tiger Ausf B of s PzAbt 503 depart from Paris, in August 1944, to reinforce German units fighting to hold Caen, Normandy. (Getty)

Above:
SS-PzAbt 17 was one of the many units to be issued with *Sturmgeschütz* instead of tanks. A strength report dated 1 April 1944 shows that the unit had an authorized allotment of 76 StuGs, 26 of which had been delivered. (Schneider)

In October 1943, the *Organisationsabteilung* reported that there were 370 tanks operational. A further 1,117 were in need of repair; this was more than 75 percent of the total strength. The shadow of defeat began to shroud the eastern front.

In this situation *Generalinspekteur der Panzertruppe* Heinz Guderian decided to intervene. On 19 October 1943, he submitted his own views as to the state and future of the *Panzerwaffe* to Adolf Hitler as supreme commander of the *Wehrmacht*:

> My Führer
>
> The general staff considers changing the organization of the *Panzerwaffe*, culminating in the demand to disband tank divisions and form combat groups. In this dramatic situation we need your explicit decision.

During the past two years, the *Panzerwaffe* has been gradually moved away from its original tactical purpose, which achieved the many remarkable successes in the first years of war. In the following period it has degenerated from a decisive attacking force to supporting local defensive infantry. Sadly, the recent massed commitment at Kursk was, for a short time, a temporary success.

On the eastern front the tank divisions were involved for major attack operations, which then turned into equally difficult defensive fighting. Importantly this showed that the Panzer force must not be used as a mobile attack reserve. Instead they should be spread over all defensive sectors, from where they can be extracted to attack new targets, but at the cost of mechanically wearing transfer marches.

Using the force in this way will lead to a continuous decrease in combat value, and this would weaken the confidence of the other service arms fighting alongside the *Panzerwaffe*. The Panzer division has shrunk to a fraction of its original fighting power; it now has an armoured infantry battalion, supported by a handful of tanks, and a relatively effective artillery force.

Despite being weakened by poor tactical use, the Panzer division does still have those elements to fulfil its original mission:

– High mobility
– Effective staff and leadership
– Highly trained and motivated men
– Complete workshop and supply services

The tank divisions can be replenished back to their original fighting power in a relatively short time.

Importantly, it is essential for the tank force to be withdrawn from the front; possibly for a maximum of two weeks. Using in-field resources, the divisions can regain a large part of their original fighting power during this time (repairing tanks and equipment, also re-establishing subunits). It is impossible to send new forces or sufficient replacement equipment. What is required is a rapid rebuilding of the fighting power for all tank divisions committed in the east to stabilize the situation on the front. The creation of rapid reaction reserves is the only feasible way.

Only by restoring the combat power of the *Panzerdivsionen*, can the present situation be resolved. Infantry divisions can help, their commitment is however limited… Intact and fully-operational tank divisions are the key for regaining the initiative.

The rapid replenishment with personnel and material for the existing tank divisions is of prime importance to keep powerful tank formations fighting on the eastern front.

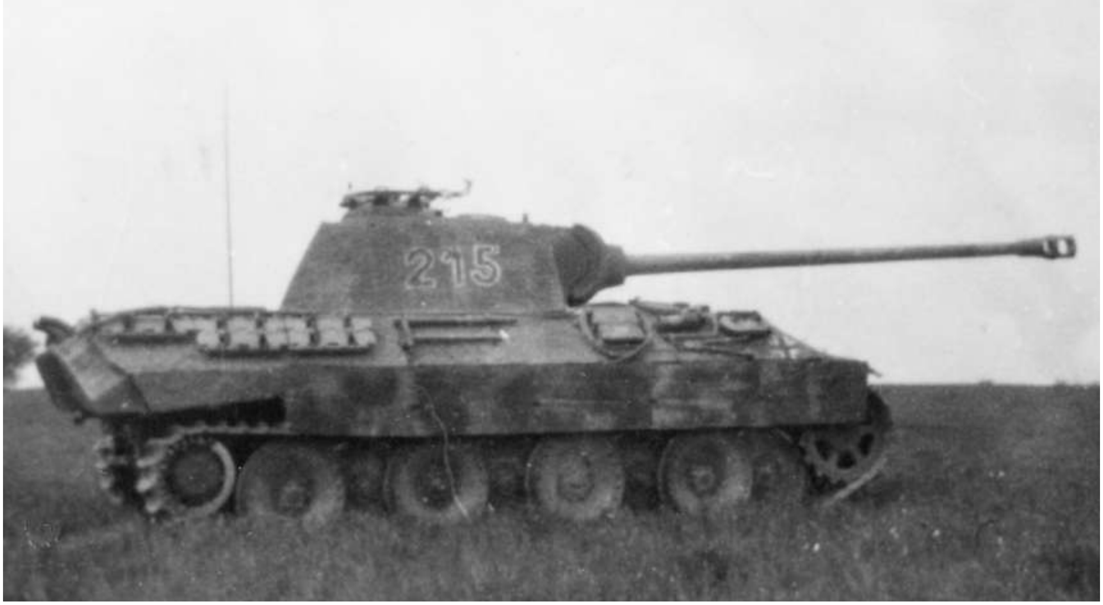
Merely regrouping surviving remnants of each division will result in the dilution of the *Panzerwaffe* and with it a decisive weakening of the fighting ability of the army.

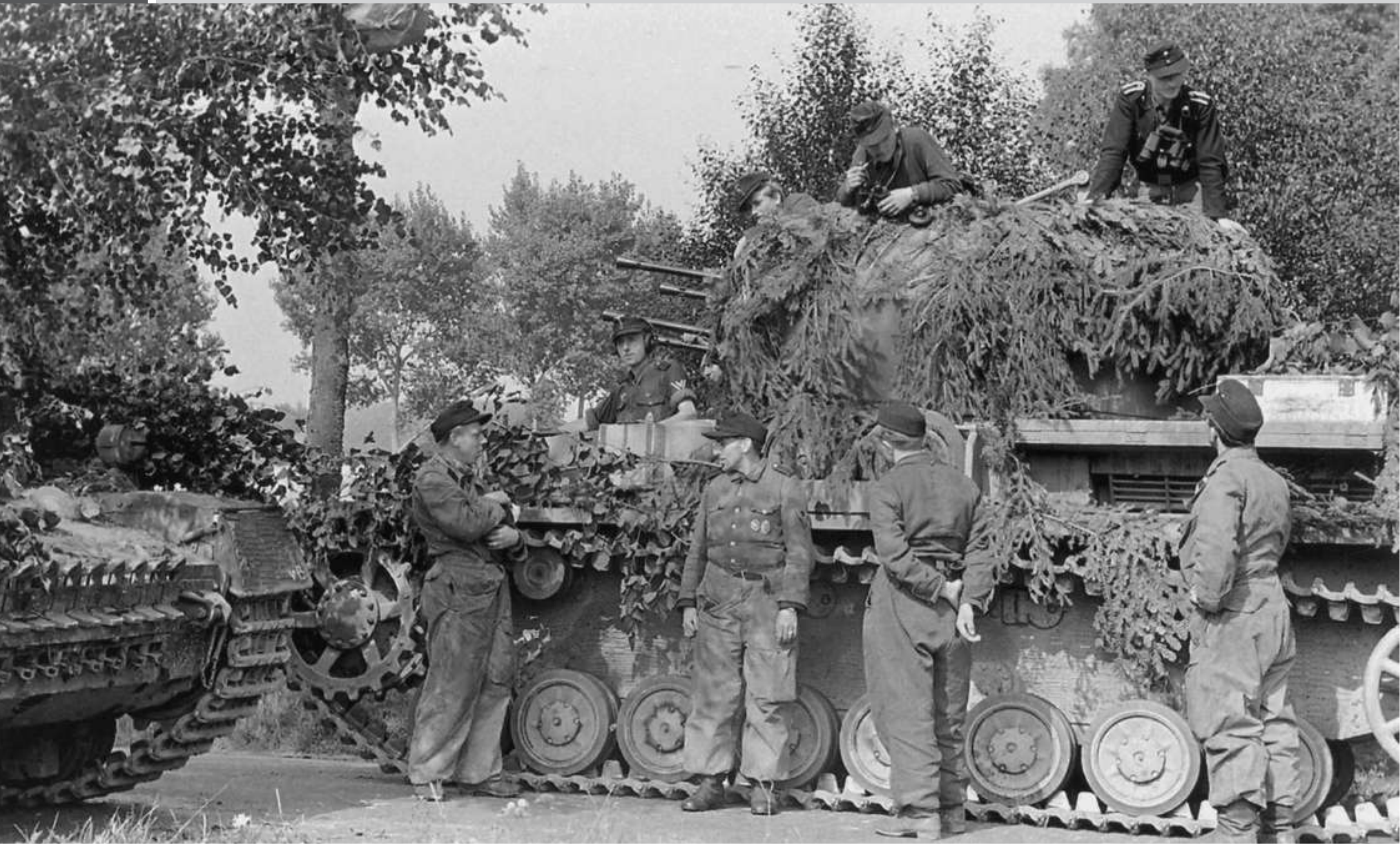
A rapid restoration of the Panzer divisions requires a sufficient allotment of ordnance and men. Most urgent is the delivery of tanks, as there are many experienced tank crews available in the units.

An increase in the production of the Panzer IV has been requested, and this is easily achievable. The urgent call for more *Sturmgeschütz*, although quite understandable given the situation, must be balanced by the fact that this proven and necessary weapon has a restricted range of application; a *Sturmgeschütz* is always inferior to a tank. The countless reports received praising the superiority of the *Sturmgeschütz*, come mainly from infantry units and have to be assessed accordingly. The rigidly-mounted weapon has a small amount of traverse [24° compared to 360°], making it vulnerable to attack from the side and also the rear. The lack of sufficient observation means and by not having a close-defence weapon, defines the *Sturmgeschütz* as a support weapon for the infantry, which in turn is always dependent on an infantry escort. The lower losses, when compared to the Panzer, can be explained by it having thicker frontal armour and that they are always carefully committed and supported by infantry. The main advantage of the Panzer is that is has greater manoeuvrability and speed in open terrain, and can be used in an attack without infantry support. The Panzer IV now has the same frontal armour (80mm) as the *Sturmgeschütz*, which gives it a clear superiority. A Panzer can be the substitute for a *Sturmgeschütz*, but not vice versa.

Left:
This PzKpfw VI Tiger Ausf E survived until 1945, when it was captured by US troops. The tank is an early production vehicle (mid-1943), and still has smoke-candle dischargers and *Schrapnellmine* (S-mine) launchers, which suggests that it has come from a tank replacement unit (Anderson)

Below:
A PzKpfw V Panther from 12.SS-PzDiv Hitlerjugend during a training exercise at Beverloo Camp, Belgium. In March 1944, the unit was attached to 1.SS-Panzer Corps at Caen, Normandy. By the time of the Allied invasion on 6 June 1944 unit had a total of 150 tanks. (NARA)





Above:
By mid-1944, the German armaments industry began delivering increasing numbers of purpose-built anti-aircraft tanks. Possibly the most effective type was the *Wirbelwind*; built on the hull of the PzKpfw IV, the type was fitted with an open rotating armoured turret containing quadruple-mounted 2cm *Flakvierling* 38. (Anderson)

> My thoughts, so far have concentrated on the situation in the east, but do have the same validity for the western and southern theatres of war.
>
> During this year, the *Panzerwaffe* has for the first time introduced new weapons into service; however they are still not available in sufficient numbers and are not fully developed… These tanks are far superior to all Russian and Allied types, and should be even more so during the coming year.
>
> A strong *Panzerwaffe* is necessary for the conduct of mobile warfare; only by preserving its fighting power can a decisive success be reached. This is of prime importance, as our enemies produce 50,000 tanks a year and are now beginning to deploy their tanks by employing proven German tactics.
>
> For the above reasons stated, I must urgently warn against the adoption of any significant changes to the *Panzerwaffe*. The seed of victory lies in a strong *Panzerwaffe*, and not in increasing the number of defensive weapons.

Heinz Guderian, a brilliant officer in his sphere of activities, was thoroughly apolitical, and in many respects remained an archetypal Prussian officer. As a military man, he did never doubt the legitimacy of Hitler's claim to power or the ruthlessness of the Nazi regime. (After the failed assassination attempt on Hitler, he condemned this as high treason, and made it clear that a soldier has to obey his supreme commander without contradiction.)

However, Guderian, who in 1935 had created the *Panzerwaffe* in close cooperation with General Lutz, made a logical and sequential analysis of the situation faced by German tank formations in the aftermath of Operation Citadel.

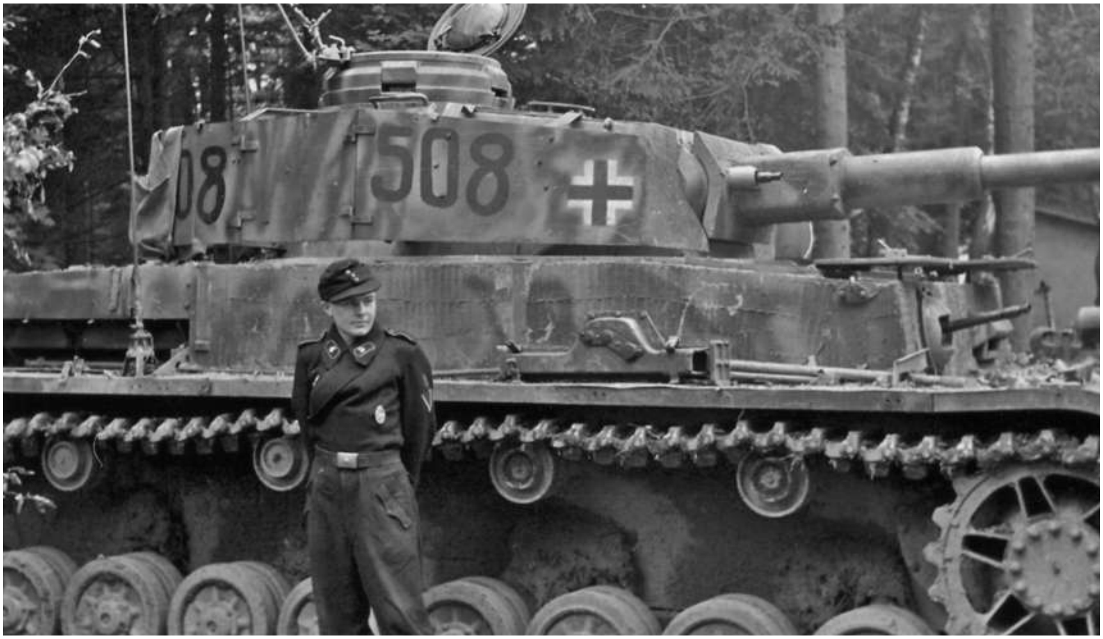
After the ill-fated commitment at Kursk, the tank divisions stationed in the east were a mere shadow of original force. Between August and September 1943, II.Abt of the 2.PzDv reported having only six PzKpfw III and six PzKpfw IV combat ready; just 18 percent of authorized strength: The unit also reported having 30 spare tank crews. The 4.PzDiv had three PzKpfw III and 20 PzKpfw IV available; 6.PzDiv had eight PzKpfw III and 20 PzKpfw IV. The 7.PzDiv had five PzKpfw III and 11 PzKpfw IV, while 13.PzDiv had only 15 PzKpfw IV.

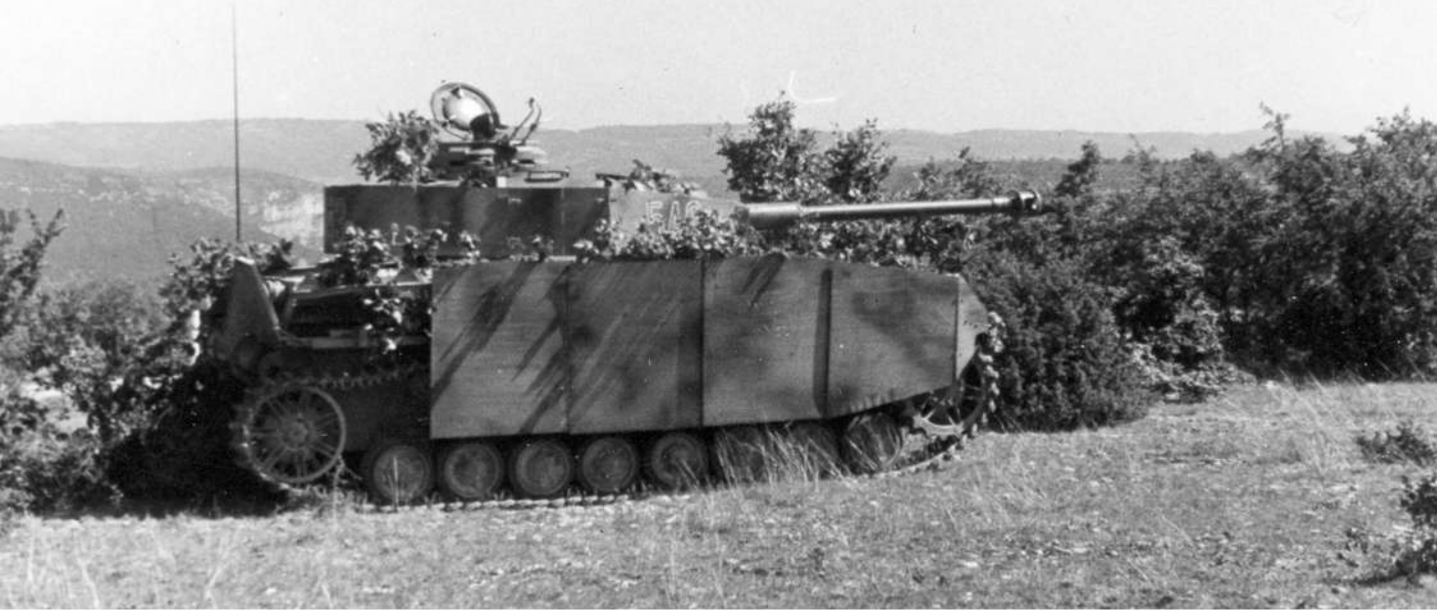
Most units had transferred their I.*Abteilung* back to Germany to train on the new PzKpfw V Panther prior to re-equipping.

Guderian's main objective was to prevent the establishment of improvised combat groups assembled from the remnants of battle-worn divisions. He felt this would further weaken combat efficiency and threaten the entire front.

He insisted that battle-worn units should be withdrawn from the front to be rested and re-equipped. The units were to be issued with as many new tanks as possible; his report mentions the proven PzKpfw IV. As a consequence, the majority of the tank divisions would have 50 percent of

Below:
A PzKpfw IV Ausf J has been converted to serve as *Befehlswagen* (command tank). The *Sternantenne* (star antenna) for the long-range radio equipment is mounted on the right-hand track guard, but lacks the armoured insulating base. (NARA)





Above:
2.SS-PzDiv Das Reich was among the many units sent to Southern France for rest and re-equipping. Following the Allied landing on 6 June, it received orders to move north. The unit was involved in Operation Lüttich (ordered by Hitler on 4 August), a counter offensive in the region around Avranches to Vire, Normandy. (Anderson)

their tank force replaced in the medium-term and within a foreseeable time span it was planned for the units to have their complete allotment. This would be in accordance with the standards of PzDiv 43 which was equipped with 96 PzKpfw IV and 96 PzKpfw V (in a PzRgt with two battalions).

His ambitious planning was based on an order for a significant increase in tank production. Increased numbers of PzKpfw IV were needed to fill the numerous gaps at the front, while the Panther was produced for the establishment of entirely new units.

Guderian's suggestions were only partly fulfilled, as it proved to be impossible to successively withdraw and re-equip all the tank divisions as planned.

His report mentions a further important fact. Guderian demanded the continuation of PzKpfw IV production, and rejected all efforts to concentrate on the Panther. This can only be regarded as forward-looking, since any interruption to tank production would have led to a collapse on all the fronts.

Guderians principal objection to the *Sturmgeschütz*, as a substitute for 'his' tanks, was based on detailed observation and careful study of battlefield statistics. With respect to the *Panzerwaffe*, his reservations must be regarded as being conclusive.

France 1944

After the occupation, the country became the ideal place for German units in need of rest. Many battle-worn units were transferred from Russia for refitting and re-equipping. Also many new units were established and underwent combat training in the French countryside. Many of these units also served as part of the occupation force.

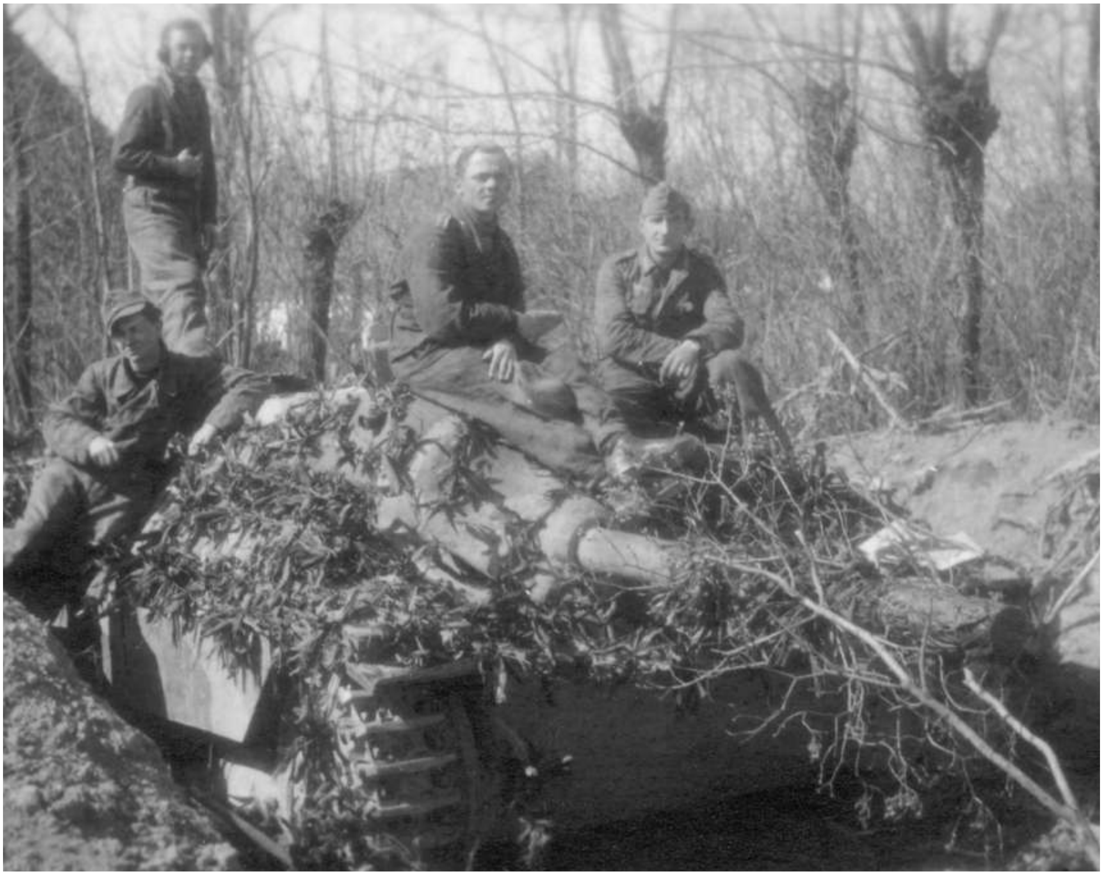
In August 1942, the deceptive tranquility prevailing in France was disrupted by an amphibious raid on Dieppe by British and Canadian forces. Although unsuccessful, the raid should have alerted the Germans to the possibility of a major Allied invasion landing somewhere on the coast of France; the question was when and where.

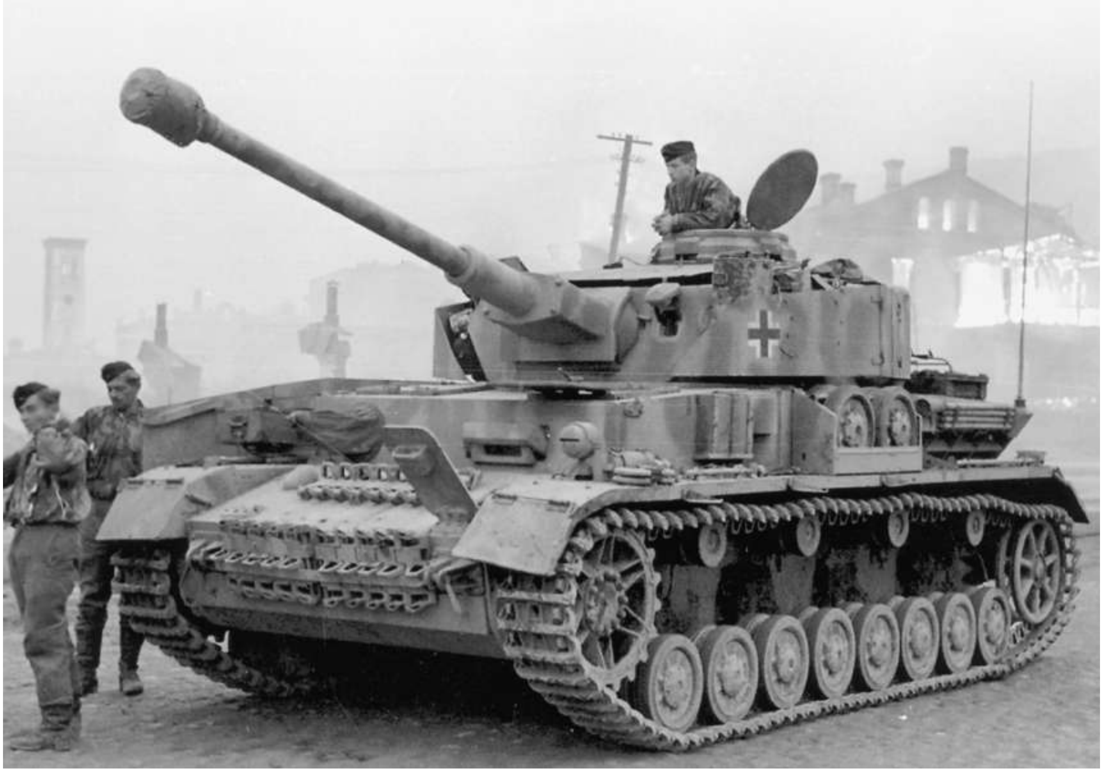
On 6 June 1944, Allied forces launched Operation Overlord, the long-expected landing in France. The massive amphibious assault, took place under strange circumstances. The Allies used various methods of subterfuge to convince German intelligence gathers that the chosen landing sites would not be the beaches of Normandy.

They also carelessly ignored many warning signs; these included an increase in radio traffic to alert French partisans to the invasion and also the jamming of German surveillance radars in the region between Cherbourg and Le Havre.

Despite the fact that German intelligence was able to anticipate the beginning of the invasion, the units positioned on the channel coast were not placed on high-level alert. German meteorologists forecast very bad

Below:
A *leichte Panzerjäger* (le PzJg) 38(t) tank hunter/destroyer, often referred to as *Hetzer* (Baiter), is in service with PzBrig 106 (FHH). This is a mystery, since the brigade was normally issued with the Panzer IV/70. (Anderson)





Above:
A PzKpfw IV Ausf H or J missing a complete side of *Panzerschürzen*, only the lower mounting brackets remain in place. Note a piece of side armour has been placed in front of the cupola, possibly to reinforce the top armour of the turret. (Anderson)

weather for 6 June, which enticed Rommel to go to his home in Germany to celebrate his wife's 50th birthday.

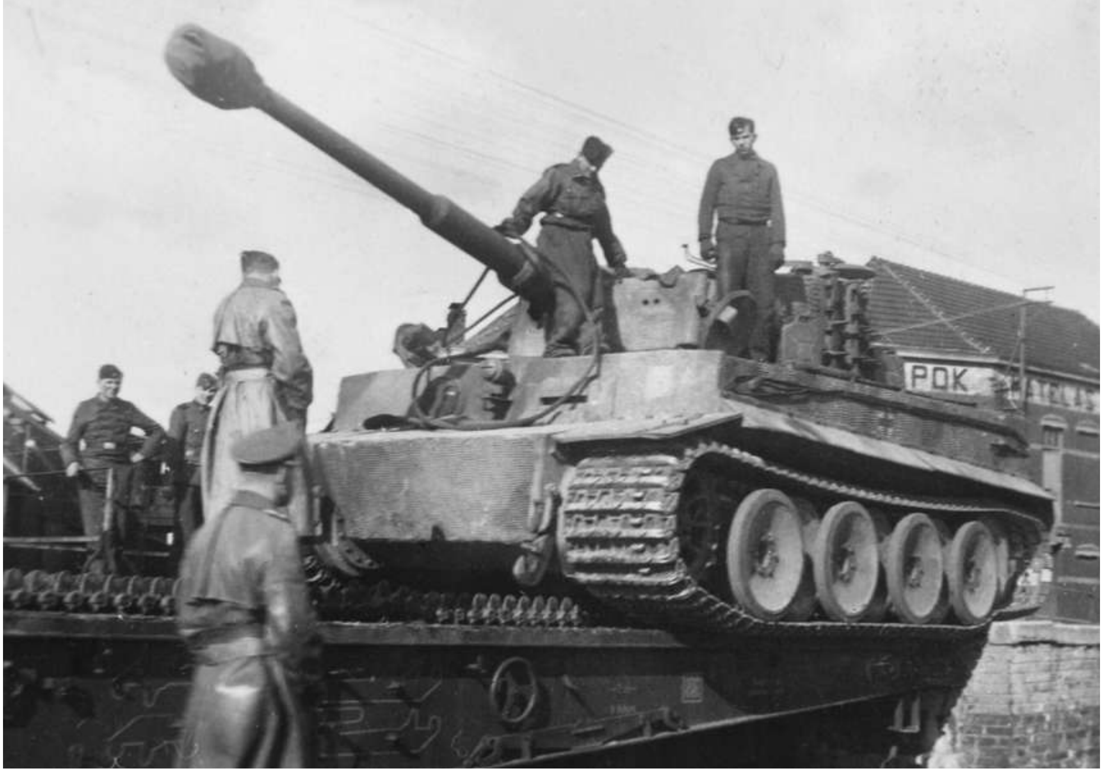
Even at the end of the day of the invasion, Hitler, von Rundstedt (as supreme commander West) and Rommel considered it to be a diversionary tactic, aimed at distracting attention from the anticipated landing area facing Dover across the Pas de Calais.

The relatively few German units positioned at Carentan, Bayeaux and Caen were taken by surprise, and had not been trained for such an event. Needless to say, the fortifications of the *Atlantikwall*, which had been under construction for a number of years and consumed precious resources, finally proven to be almost totally ineffective.

Hitler rejected the commitment of the strategic tank reserve, but he changed his mind the next day.

Initially the Germans had stationed 21.PzDiv and 12.SS-PzDiv Hitlerjugend very close to the Normandy coast, as part of the main defensive force. However, these tank divisions (and many other German units) were the target of a heavy naval bombardment and attacks by large formations of Allied bombers.

By 12 June, the Allied forces had succeeded in establishing several bridgeheads spanning an area some 100km wide and 30km deep, where they unloaded vast amounts of material and troop reinforcements.



Above:
Contrary to the regulations, a PzKpfw VI Tiger Ausf E of s SS-PzAbt 101 Leibstandarte Adolf Hitler has been loaded on a flatbed railway wagon with combat tracks fitted. The narrower transport tracks, which should have been fitted, are visible under the tank. (Anderson)

The course of the fighting in Normandy can be explained through the experiences of an elite tank unit. At the turn of 1943/44, Panzer-Lehr-Division (vaguely translated as 'schooling' division) had been established to the southwest of Paris using elements of the armoured forces training units based at Bergen and Krampnitz, Germany.

Panzer Lehr Division was organized according to the 1943 organizational standard for a Panzer division, but in reality the structure was only applied as a guide. Although the supply never did allow the majority of units to receive their authorized full complement of new tanks during re-equipment or establishment. However, PzLehrDiv did receive more than most. During the months of formation the true allotment of equipment changed repeatedly, and it became better equipped than other units and considered to be an elite formation.

German Tank Strength West, June 1944

PzKpfw III (various)	PzKpfw IV lang	PzKpfw Panther	PzKpfw Tiger	StuG	le PzJg IV	PaK Sfl AT SP gun	Beute-panzer
39	748	663	102	248	62	182	179

219

Left:
A PzKpfw V Panther with a group of grenadiers on the engine covers breaks through a hedgerow in Normandy: The sunken narrow lanes and dense foliage, known as Bocage, caused problems for both the defenders and attackers. (Getty)

By 17 June, both the battalions in PzLehrDiv had been fully established with 97 (103 authorized) PzKpfw IV and 86 (79 authorized) Panthers. At the same time, it had been allotted 14 Tigers, of which six were available (in April some 28 were still authorized). The regimental staff company had 12 *Flakpanzer* 38(t) anti-aircraft tanks and a company of demolition carriers. This latter unit was in the process of being reorganized, but still operated a mixed establishment of *Leitpanzer* (control tanks), nine *Sturmgeschütz* and six Tigers, plus an unknown number of B IV demolition-charge carriers.

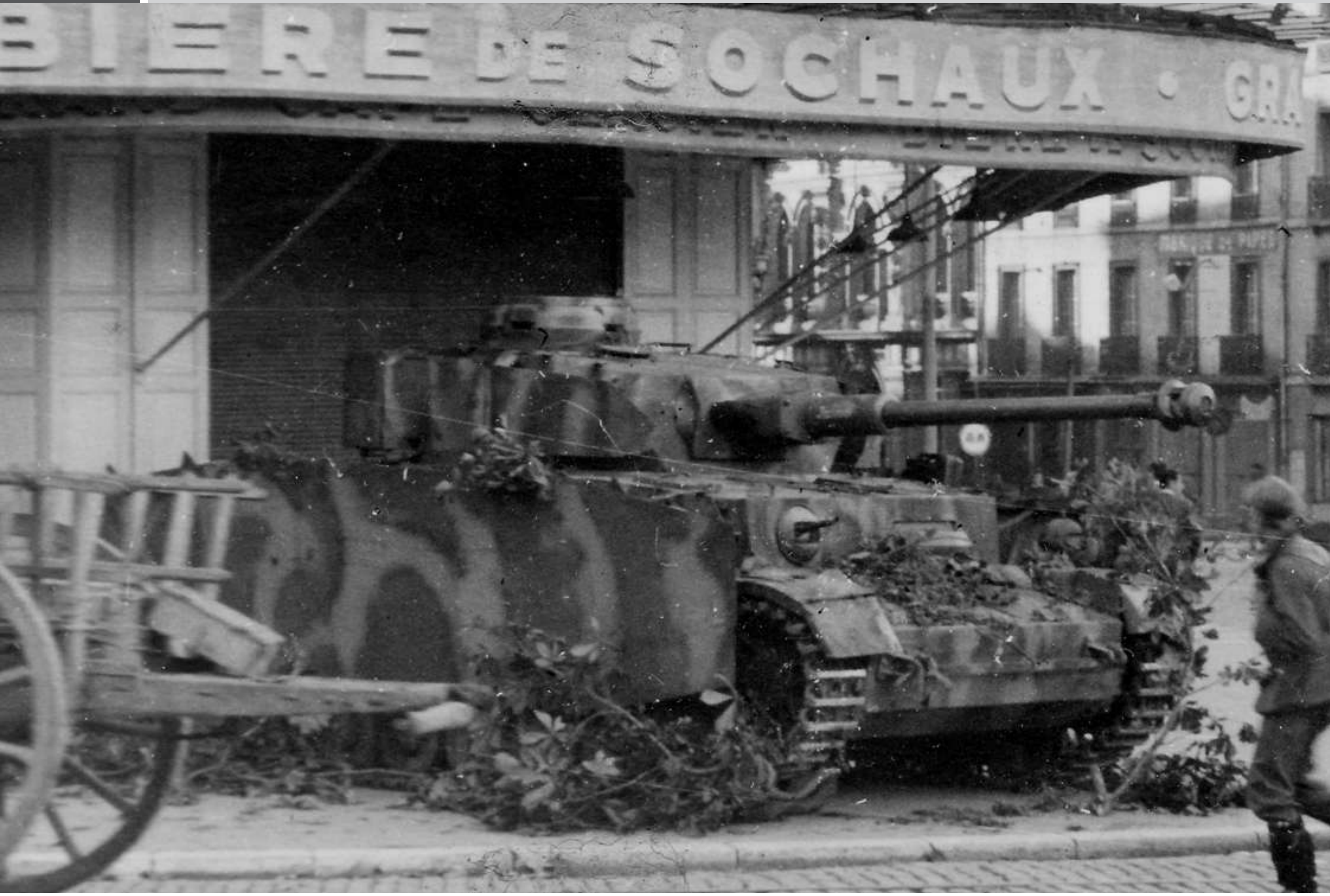
Their *Panzerjäger-Abteilung* was equipped with 31 *Jagdpanzer* IV.

Left:
Carefully camouflaged against the ever present danger of being spotted by ground-attack aircraft; a column of PzKpfw IV tanks from PzLehr-Div moves on a rural road in France. Losses due to air attacks became so serious that all transfers in daylight were (except in an emergency) forbidden. The tank, a PzKpfw IV Ausf H, carries the turret number '333', also a 7.92mm *Maschinengewehr* (MG) 34 has been fitted in the anti-aircraft mounting. (Bundesarchiv)

Differing to an ordinary tank division, both of its PzGrenRgt were to be issued with armoured personal carriers (SdKfz 251); an impressive total of 612 (726 authorized).

On 6 June, Panzer Lehr Division was positioned some 100km southeast of Caen, where the Allied had established an important bridgehead. The PzLehrDiv was decimated by heavy air attacks during their move land toward the city.

The following fighting around Caen proved to be very heavy and difficult. On 6 August, the the commander of PzLehrDiv submitted a *Zustandsbericht* (situation report), a notable feat give the situation:



Above:
In an attempt to avoid air attack, the crew of this PzKpfw IV from 2.SS-PzDiv Das Reich has reversed their vehicle into the entrance of a bar. (Anderson)

PzLehrDiv as of 1 August 1944.

After 60 days of constant fighting on the invasion front, the division has been seriously affected, especially by the defensive battle west of St. Lo. Numerically, the combat strength of the *Panzergrenadiere* has diminished to insignificant numbers. The majority of heavy weapons, artillery and anti-aircraft guns (including towing vehicles), tanks and tank destroyers have been destroyed. Some 70 percent of the weapons that remain available are in the workshops. Due to the absence of supporting forces, artillery and anti-aircraft weapons had to be sacrificed when fighting to hold up the enemy. Many of the available machine guns are mounted on vehicles and cannot be used for ground combat.

To reach its original combat strength, the division requires the transfer of two replacement battalions and the resupply of all missing heavy weapons; artillery and anti-aircraft guns including towing vehicles. Furthermore four weeks will be required to integrate all replacements.

Troop morale:

The latest incidents, including attacks by 2,000 bombers on the divisional sector, frequent raids by ground-attack aircraft, also constant shelling by enemy artillery, and finally a continuous deployment 60 days has severely affected the mental and and physical strength of our troops.

The complete absence of the *Luftwaffe* is deeply demoralizing, and in general is regarded as the main reason for the present situation. A reasonable effective commitment of own fighter aircraft would considerably improve the morale of our troops.

Special problems:

a) High losses of officers and non-commissioned officers has led to a reduction in the fighting prowess of the PzGrenRgt.
b) The fighting ability of the remaining personnel has decreased due the overall superiority of the enemy.
c) The total loss of most heavy weapons… including towing vehicles, tanks and tank destroyers, communications, medical and liaison vehicles.
d) Repair of damaged weapons, equipment and motorized vehicles is dependent on the supply of spare parts.
e) Spare parts (final drives and engines for PzKpfw IV, V and PzJg IV) have not been supplied in sufficient quantity to repair the numerous tanks awaiting repair.
f) …
g) A severe lack of tyres for motorcycles and trucks.

Battle value: PzKpfw IV [not suited for attack or defensive missions, author].

Pz-Lehr-Div: material situation, armoured vehicles, as of 1 August 1944

	StuG	**PzKpfw III**	**PzKpfw IV**	**PzKpfw V**	**PzKpfw VI**	**Armoured halftracks**	**SP artillery**
Allocation	31	8	103	79		675	12
Ready for action	6		15	12		392	2
Under repair, up to five weeks	4	3	7	6		54	3

The StuG listed are le PzJg IV and PzKpfw III artillery observation tanks; *Infanteriegeschütz* (IG) are 15cm 15 cm sIG 33 *Grille* [Cricket] self-propelled guns.) This situation report clearly describes the situation in general of the *Panzerwaffe* in France, and that of all German units fighting to halt the invasion.

Above:
Young soldiers take the opportunity of a ride on a heavily-camouflaged PzKpfw V Panther Ausf G, possibly from 9.SS-PzDiv Hitlerjugend. The tank is fitted with an improved type of *Panzerschürzen*. (Bundesarchiv)

Even those tank divisions that were very well-equipped, proved to be unable to fight using 1940-style tactics, which had once proved to be so successful.

From an after action report from Major Riechel, PzRgt 11, 9.PzDiv, which had been transferred to Normandy in June/July, excerpts:

> Experiences made during operations on the Normandy front:
>
> 2.) The fighting on the Normandy front is characterized by the following:
>
> a) the special terrain conditions
> b) the great superiority of the enemy

PzLehrDiv: material situation, soft-skinned vehicles, as of 1 August 1944

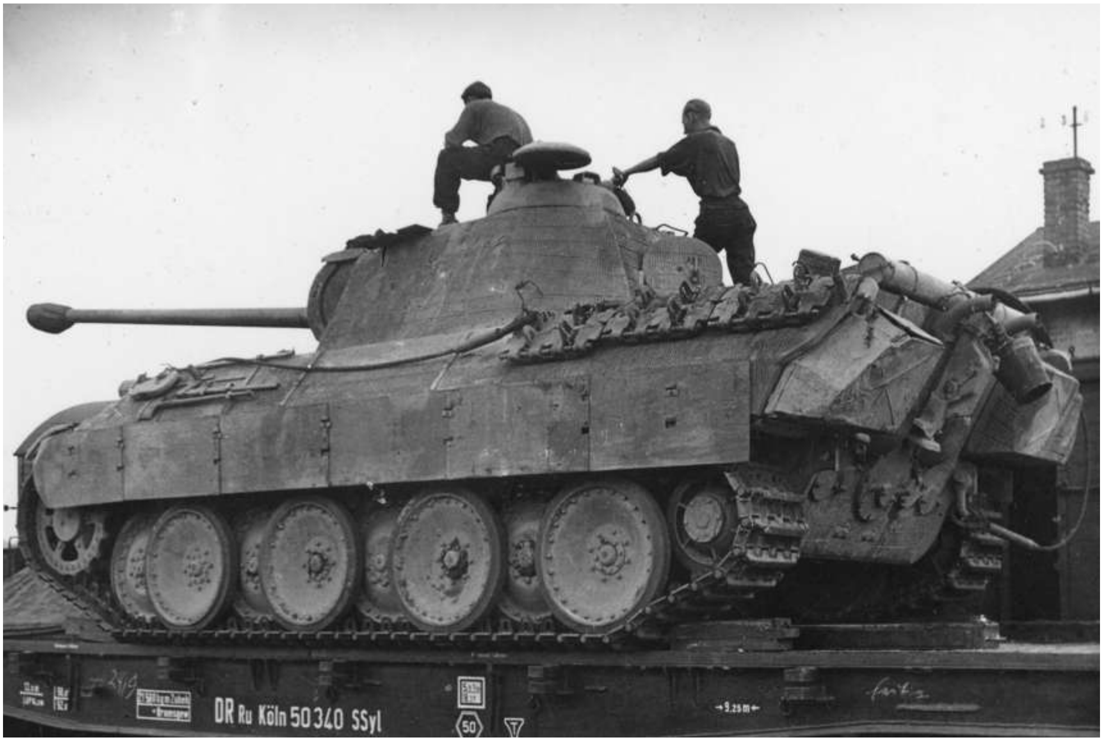
	Kettenkrad	Motor Cars 4x4	Maultier	Halftracks 1 to 5 ton	Halftracks 8 to 18 ton
Allocation	228	520	64	59	95
Ready for action	16	226	34	39	46
Under repair, up to five weeks	4	30	9	6	12

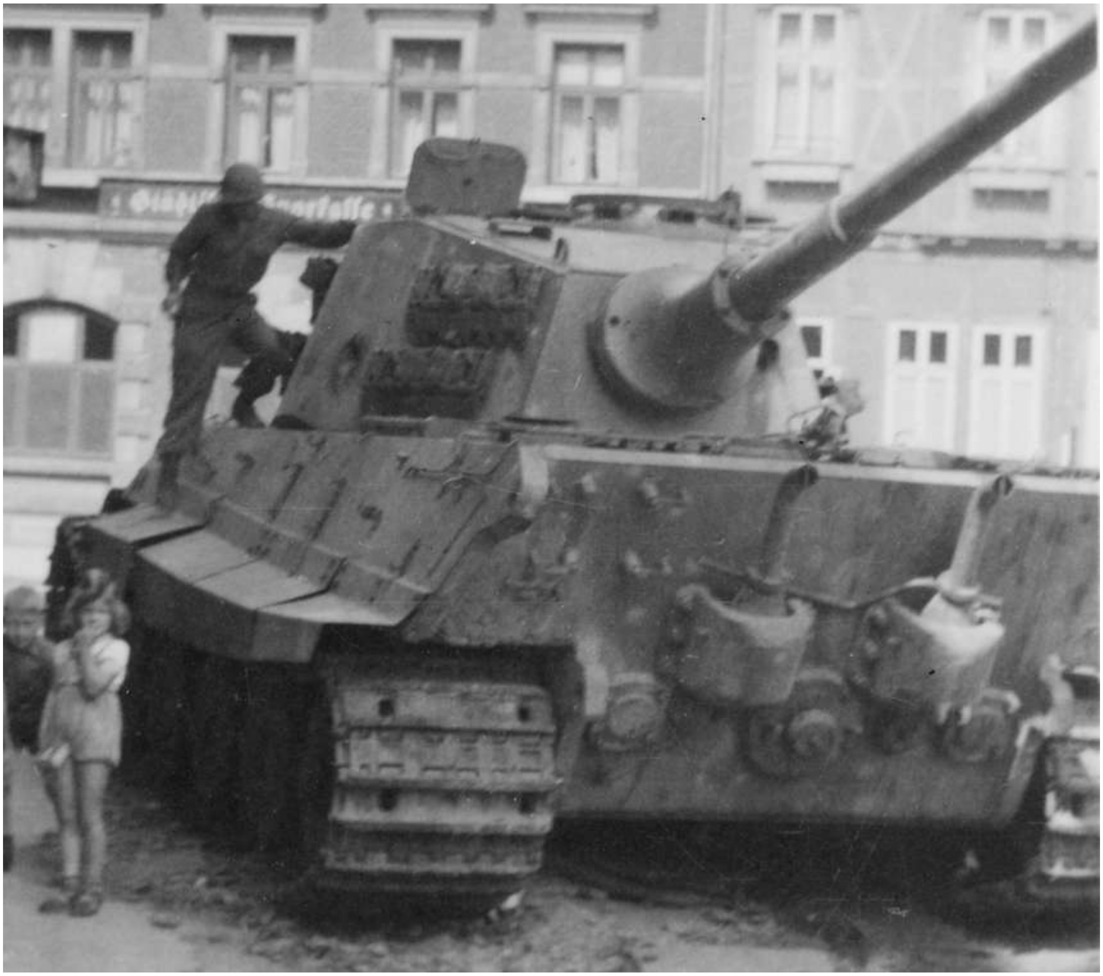
As for a)
The terrain in the Normandy is mainly scrub or open meadows predominantly bordered with hedges, bushes and trees. The many narrow lanes provided protection against air reconnaissance and ground observers. This terrain is not suitable for large-scale open fighting. Raiding patrols and single combats are mainly used. Unfortunately, the hedges and trees also restrict our observations and field of fire.
All the important railway junctions have been destroyed by large formations of enemy bombers. In general, the railway network is a complete shambles and almost unusable.

As for b)

The overwhelming material superiority of the opponent is characterized by massive commitments of artillery and grenade launchers [mortars].. During our preparations for an attack, the ships positioned off the coast began a bombardment… During our attack mission, some 21,000 shells fell on our division in a sector of 4.5km width… The enemy has plenty of guns to back his infantry divisions.
This old *Ostkämpfer* [veteran from the eastern front] quickly became accustomed to the situation.

Below:
A PzKpfw V Panther Ausf A loaded on an SSyms waggon for transportation to the frontline. The tank is fitted with a new type of commander's cupola, which provided better observation and protection. A coating of Zimmerit has been applied and the tank is fitted with a complete set of *Panzerschürzen*. Note the container for the gun cleaning kit has been mounted on the engine deck. (Anderson)





Above:
A PzKpfw VI Tiger Ausf B or *Königstiger* (King Tiger), the lack of a Zimmerit coating suggests that it was manufactured after August 1944. The heavy tank was abandoned by its crew in early 1945 and is being inspected by a US Army recovery team. (Anderson)

The enemy holds absolute air superiority over the invasion front. Their aircraft attack with bombs, rockets or cannon fire, even against a single fighting or transport vehicle and just about anything that moves in our lines. In contrast, there is no sign of the *Luftwaffe*.

6.) The *Panzergrenadiere* engage in combat with the depressing knowledge of the enemy's absolute superiority… We have to put special emphasis on the usage of all available close-combat weapons. According to a report from PzLehrDiv, their score against the enemy in June was as follows:

a) To close-combat weapons	42
b) To anti-tank guns	15
c) To *Sturmgeschütz*	33

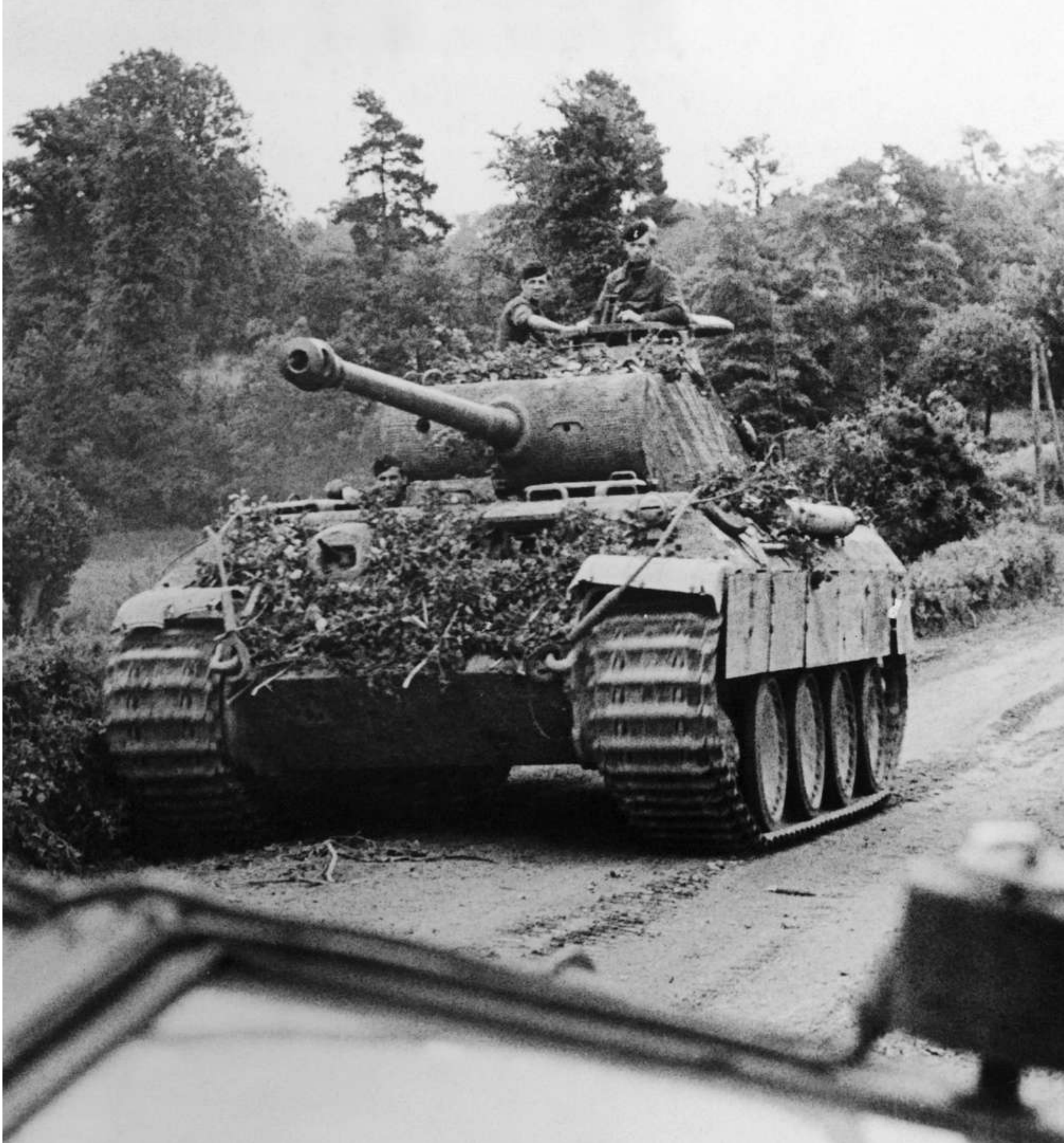
d) To tanks	48
e) To artillery and anti-tank guns	7
f) To mines, etc	15

> They did not commit their SdKfz 251 amoured personnel carriers, but did deploy their *Kanonenwagen* [7.5cm StuK 37 L/24-armed SdKfz 251/9]. These are dug in to reinforce the mainline of defence and fight in close cooperation with tanks.
>
> It proved advantageous to train some members of the *Panzergrenadiere* in the use of captured enemy weapons.
>
> 8.) Our tanks were deployed in the infantry-escort role only. Any normal commitment using tanks is currently impossible, since their mobility is restricted by the narrow lanes and dense hedgerows.
>
> It was reported by several sources that the German Panzer has proved to be superior to those of the enemy, including a Cromwell, the latest British tank.

In the days and weeks after the invasion, German combat units had to operate over the same terrain as the Allied invaders. Under such conditions, German tank commanders could not use proven tactics and their superior tank guns. The fighting became even more perilous, for both sides, as it developed into close-range combat.

However if the fighting moved out into open terrain, the Allied tank

Below:
A PzKpfw V Panther has been immobilized by artillery fire, a number of track links have been destroyed by shell splinters. In the background an US Army M10 tank destroyer has moved into position. (NARA)



Above: A PzKpfw V Panther Ausf A travels along a road during daylight, a practice that was usually strictly forbidden. Note the armoured visor over the driver's vision port is open. This was considered to be a weak point and was not fitted on the Ausf G. (Getty)

Above:
The trees along this country road offer some protection against observation by patrolling enemy aircraft. The PzKpfw VI Tiger Ausf E of SS-PzAbt Leibstandarte Adolf Hitler has a factory-applied Zimmerit coating and is fitted with the cast-type of commander´s cupola. (Anderson)

commanders radioed for ground-attack aircraft to strafe their enemy. Moreover, Allied armoured formations began to elaborate their own combat tactics, which proved to be effective. Whenever facing superior numbers in an enemy tank assault, Allied tank forces would rapidly retreat to a temporary defensive position; artillery and air-support was then called in to attack and destroy the enemy formation. German forces were unable to cope.

Adjusting the organizational structures

In late 1943, the majority of Panzer divisions were authorized to have 22 tanks in each company. In early 1944, every effort was made to equip the I.*Abteilung* with Panther tanks supported by their II.*Abteilung* (PzKpfw IV). Although the 1943 structure for Panzer divisions called for two battalions with four companies with 22 tanks each, in reality the number tanks issued to each company was actually reduced to 17.

However, tank production could never keep up with the requirements of struggling front-line units. In this situation, Guderian once again called for operational reserves, as recorded in a *Führervortrag* (presentation to Adolf Hitler) dated 23 March 1944:

Left:
Camouflaged against observation by free-roaming Allied ground-attack aircraft, a PzKpfw V Panther Ausf A is part of a defensive line positioned on high ground inland from the D-Day landings on the beaches in Normandy on 6 June 1944. (Getty)

Above:
In 1944, the majority of tanks that remained in German front-line service were PzKpfw IV and the *Sturmgeschütz*, which when deployed tactically posed a significant danger to all Allied tank types then in service. The trident emblem painted at the side of the driver's visor indentifies the tank as being from 2.PzDiv. (Anderson)

My Führer,

Today's lecture has the objective to once again explain how to regain the army's ability to perform offensive operations.
This war can never be decided to our favour using a defensive strategy. We have to regain the material means, and the will to attack the enemy… Only then does the attack bear any chance of success, and only if powerful tank forces are available in sufficient numbers.
Currently nearly all Panzer divisions have been destroyed in many disastrous defensive operations. The situation resembles 1918, when the high command ordered the cavalry to dismount in order to fight in the trenches.

Before the outbreak of the war you, my Führer, ordered the establishment of great tank formations. These were the tools to win the coming war in the way, you, my Führer, ordered:

> Offensively, like a lightning flash, using surprise and thus saving lives.
>
> In this tense situation, we must not deviate from these principles of warfare, which you have deemed to be correct.
> To resume our proven method of fighting I have repeatedly and insistently requested the creation of operational reserves. So far this has failed to materialize.
> Fully aware of the present situation in regard to personnel and equipment, I believe that it is still possible to establish these reserves… It is however questionable, as to whether this will still be feasible in six months' time.
>
> At minimum we would require:
>
> Eight Panzer and *Panzergrenadier* divisions
> Six infantry divisions
> Army troops, among them three s PzAbt (Tiger)
> three s PzJgAbt
> two *Sturmpanzer* Abt
> One parachute corps
> One cavalry unit
>
> To be ready by 1 June.

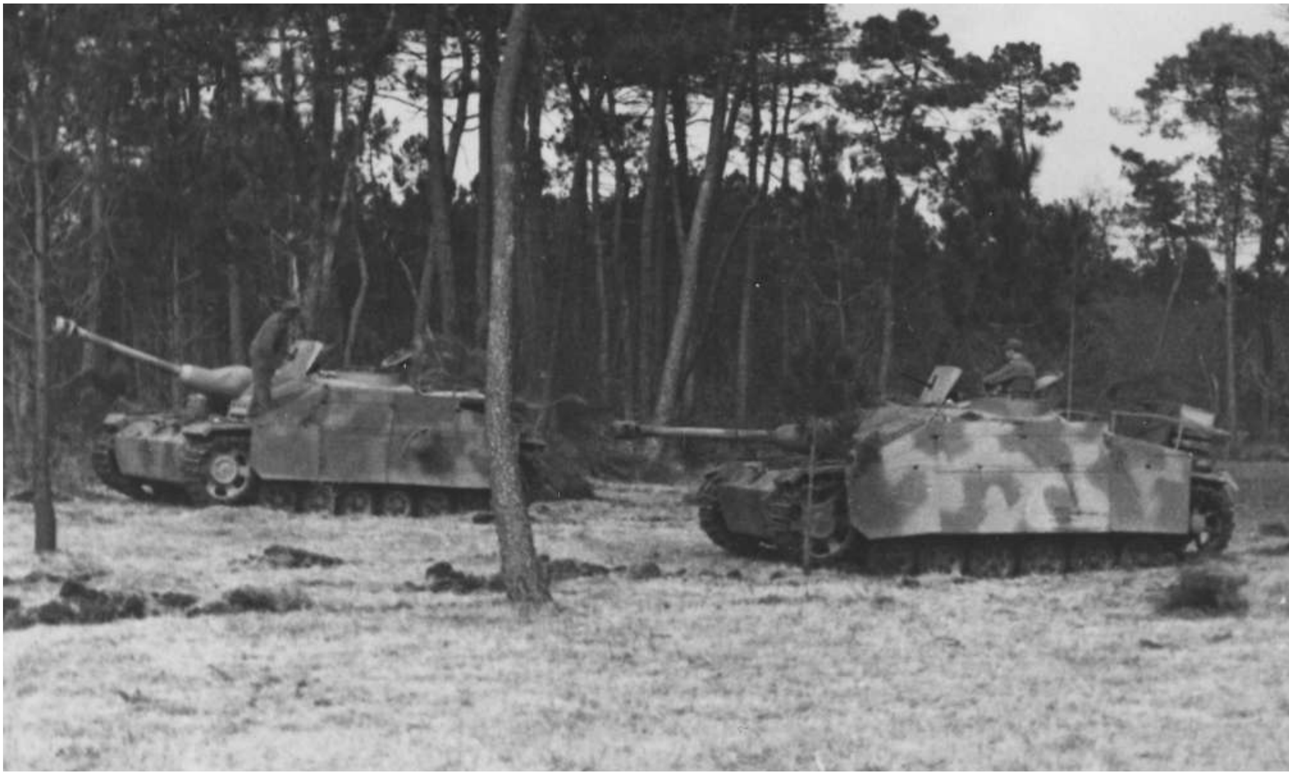
The author cannot judge whether this almost submissive request to Adolf Hitler, the commander-in-chief of the *Wehrmacht*, is an expression of great respect, or whether Guderian wanted to present his concern as purposefully as possible.

However a week after the meeting, Guderian reported to Jodl and Zeitzler (both approved of his plan) with detailed information on the units affected.

The task proved to be too great for the economically weakened once powerful Reich. Although some units including *Panzer-Lehr-Division*, 2.SS-*Das Reich* and 2.PzDiv were mobilized, the D-Day landings, and also the massive Russian offensive against *Heeresgruppe Mitte* precluded any further moves.

PzDiv 44

By mid-1944, the old 1943 organizational structure for Panzer divisions was once again altered. The so called '*freie Gliederung*' (fG – unrestricted structure) was applied to all KStN valid for the *Panzertruppe*. The line of reasoning was to offer a more flexible solution to be available for different requirements. A further side effect was the reduction in the numbers of soft-skinned vehicles such as trucks and prime movers in a



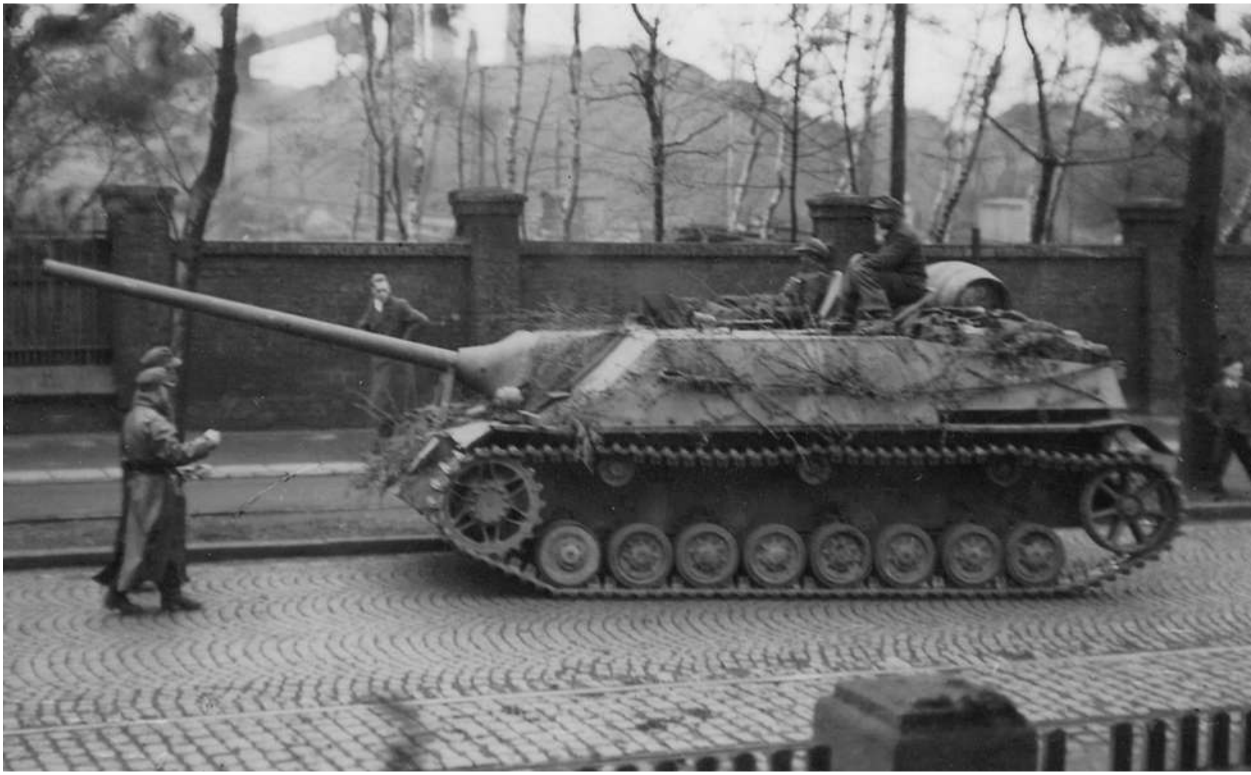
Above:
Tank destroyer unit PzJgAbt 61 had been attached to 11.PzDiv since 1941. Although in August 1944 it was authorized to have a complement of 31 *Sturmgeschütz*, only eight were reported as being operational. Both of the StuG III Ausf G are fitted with the *Saukopf* (pig's head) gun mantlet (also known as *Topfblende*) and *Panzerschürzen.* (Anderson)

number of units; a most important move at time when everything was in short supply.

The new structure for a tank company in a Panzer division was now called a *Panzerkompanie* 'Panther' or 'IV', classified under KStN 1177 (fG).

It was now possible to authorize different allotments of equipment to units, the structure now provided 14 or 17 tanks, thus allowing for different requirements and the supply situation. However, the most remarkable difference was the total absence of the workshop and all supply elements, which considerably reduced the number of soft-skinned vehicles. These new echelons were now combined as a *Versorgungs-Kompanie* (supply company) attached to each battalion. The two *Werkstatt-Kompanien* (workshop companies) previously attached to the battalion were now reduced to one in each regiment.

The formation of PzDiv 44 had small differences to the preceding structure, which still showed an official provision of 22 tanks for each combat company. However it was explicitly noted that 17 tanks would be issued as a temporary measure. In time, new KStN according to the *freie Gliederung* were introduced, thus confirming the reduction to 17, then later to 14 tanks.
A remarkable change was the integration of two *Panzerjägerkompanien* (issued with 14 *Sturmgeschütz* or *leichte Panzerjäger* IV each) into a *Panzerjägerabteilung*, to replace self-propelled anti-tank guns.



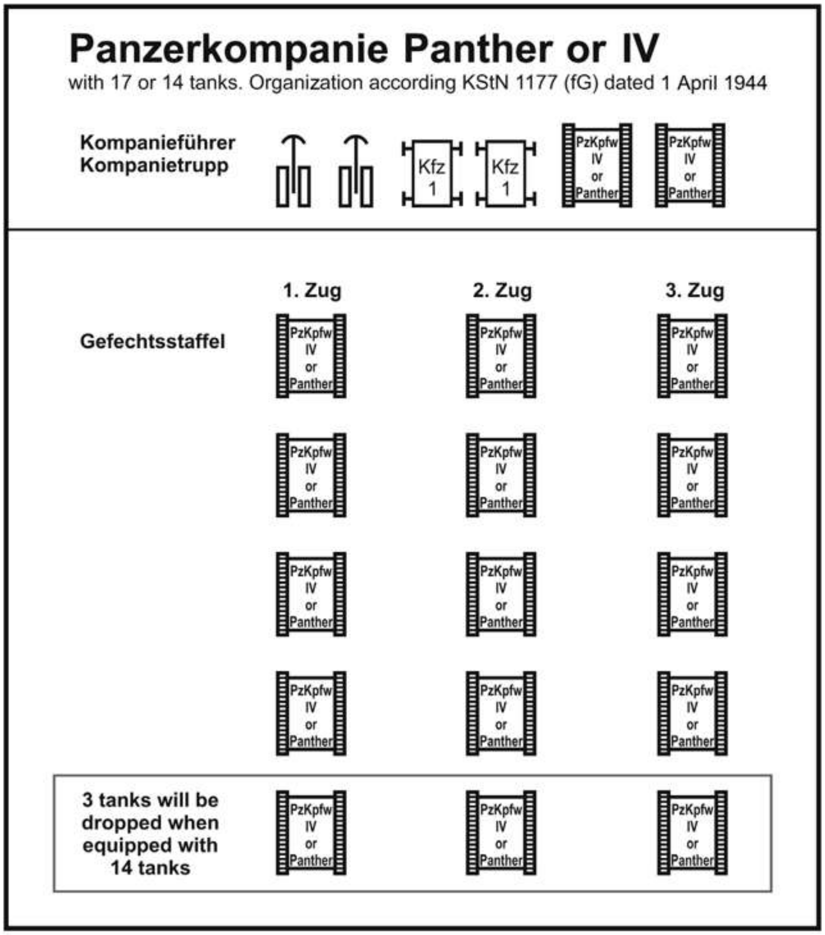
Above:
The *Jagdpanzer* IV was the successor to the *Sturmgeschutz*. The first versions were armed with the 7.5cm PaK 39 L/48, but almost immediately re-armed with the 7.5cm KwK 42 L/70 as mounted in the PzKpfw V Panther. It was then re-designated as the Pz IV/70. Although the type had a powerful gun and thick frontal armour, it was seriously nose heavy and the suspension system was dangerously overloaded which, in turn, resulted in problems with the final-drive units. (NARA)

Establishment of Panzer Brigades

In response to Heinz Guderian's discussions in March, Wilhelm Keitel, supreme commander of the *Wehrmacht*, intervened on 2 July 1944. By this time, Allied forces had successfully widened their bridgeheads in Normandy, while a Soviet offensive which began on 22 June had shattered *Heeresgruppe Mitte*:

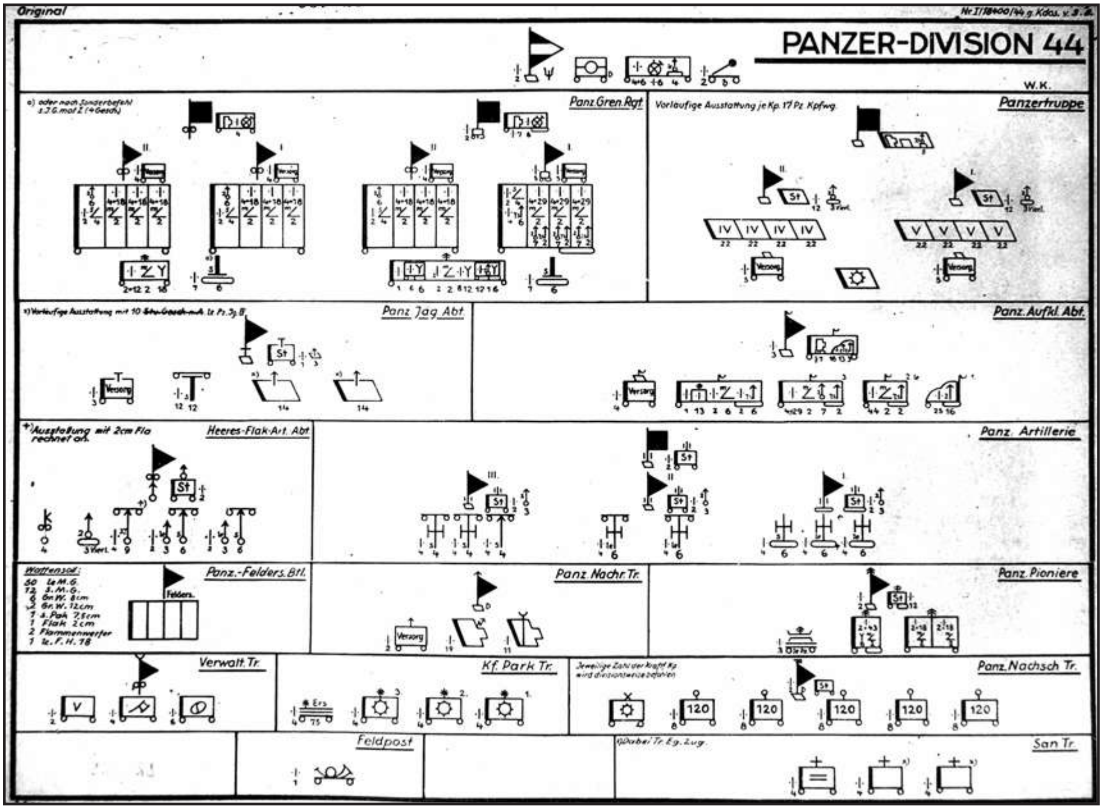
> The Fuhrer demands:
>
> 1.) Looking at the present situation of *Heeresgruppe Mitte*, the Führer expressed that it would be useful to establish rapid moving, small armoured battle groups, able to smash an attacking armoured spearhead.
> 2.) The Führer envisages the possible composition of such a *Kampfgruppe* as follows:
>   One armoured half-track battalion
>   One tank group of 30 to 40 tanks (le PzJg IV)
>   One anti-tank company or 3.7cm PaK attached to the armoured half-track unit, or some 2cm or 3.7cm anti-aircraft weapons

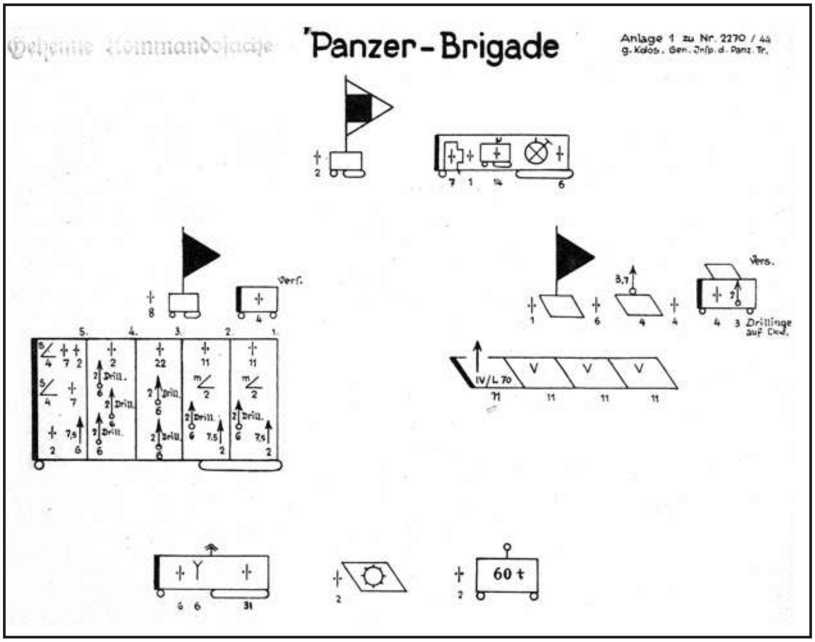
Tank company Panther or PzKpfw IV

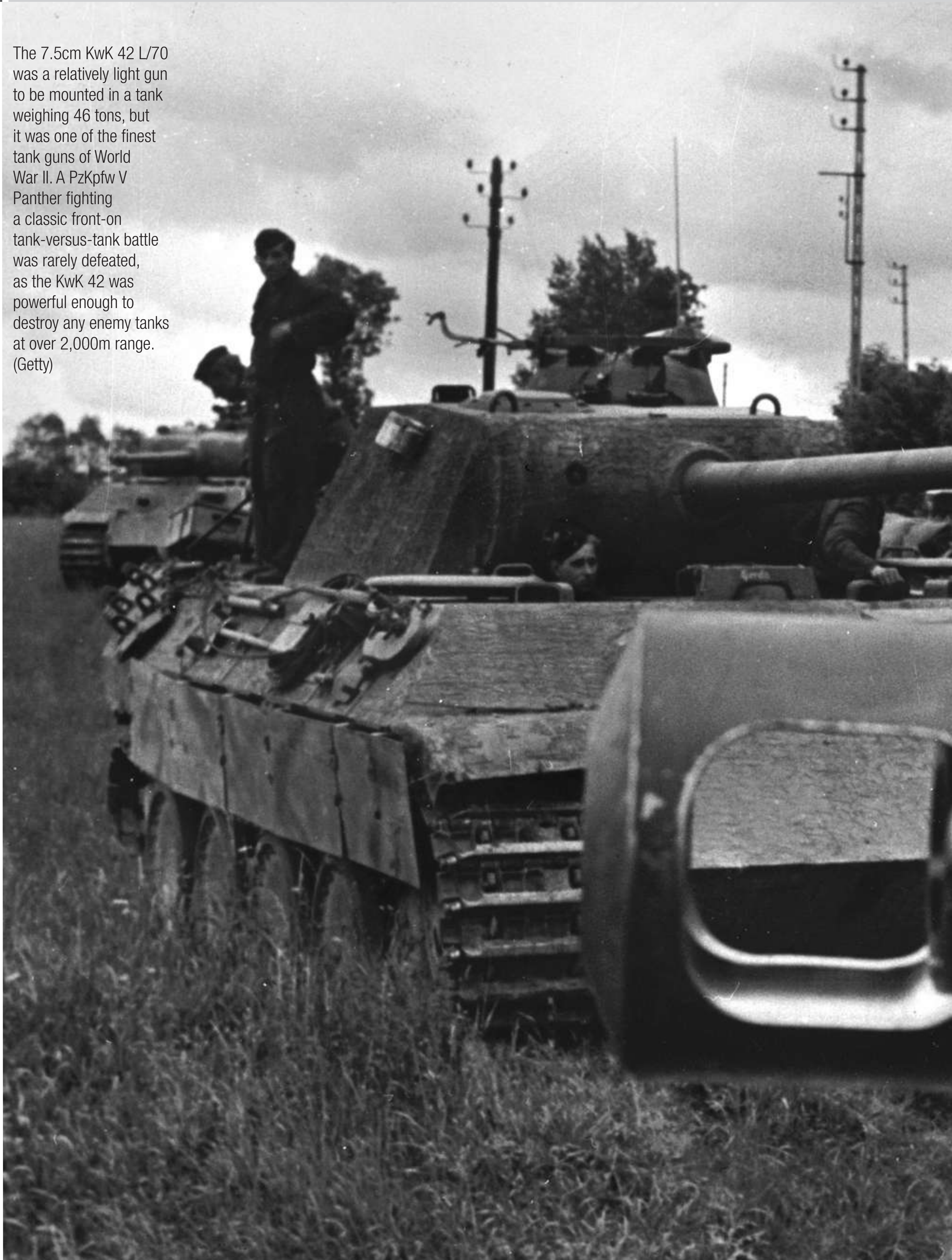

Panzerkompanie Panther or IV
with 17 or 14 tanks. Organization according KStN 1177 (fG) dated 1 April 1944
Kompanieführer
Kompanietrupp
Kfz 1
Kfz 1
PzKpfw IV or Panther
1. Zug
2. Zug
3. Zug
Gefechtsstaffel
3 tanks will be dropped when equipped with 14 tanks

3.) The Führer demands that approximately 12 such battle groups be formed, and be designated as a Brigade.
4.) To ensure the full mobility of these *Kampfgruppen* during the next winter, he suggests that the new *Sturmgeschütz* (on 38[t]) are fitted with wider tracks.
5.) The Führer expects to receive suggestions for the exact organization of such battle groups soon.

This document seems to be somewhat simple in its content. The warfare incompetent Hitler again meddled in the duties of his military, issuing complicated directives even down to the width of tank tracks. The haste with which the general staff acted on Hitler's impulsive order underlines


Original
PANZER-DIVISION 44
W.K.
a) oder nach Sonderbefehl s.J.G.mot.Z (4 Gesch.)
Panz.Gren.Rgt.
Vorläufige Ausstattung je Kp. 17 Pz. Kpfwg.
Panzertruppe
St
Versorg.
IV
V
*) Vorläufige Ausstattung mit 10 s.Pz.B.
Panz.Jag.Abt.
Panz.Aufkl.Abt.
+) Ausstattung mit 2cm Fla rechnet an.
Heeres-Flak-Art.Abt.
Panz. Artillerie
Waffensoll:
60 le.M.G.
72 s.M.G.
6 Gr.W. 8cm
4 Gr.W. 12cm
7 s.Pak 7,5cm
7 Flak 2cm
2 Flammenwerfer
1 le.F.H.18
Panz.-Felders.Btl.
Felders.
Panz.Nachr.Tr.
Panz.Pioniere
Verwalt.Tr.
Kf.Park Tr.
Jeweilige Zahl der Kraftf.Kp. wird divisionsweise befohlen
Panz.Nachsch.Tr.
120
Feldpost
Dabei Tr.Eg.Zug
San.Tr.


Geheime Kommandosache
Panzer-Brigade
Anlage 1 zu Nr. 2270 / 44
g. Kdos. Gen. Insp. d. Panz. Tr.
Verf.
Vers.
Drill.
3 Drillinge auf Kfz.
IV/L 70
V
60 t



The 7.5cm KwK 42 L/70 was a relatively light gun to be mounted in a tank weighing 46 tons, but it was one of the finest tank guns of World War II. A PzKpfw V Panther fighting a classic front-on tank-versus-tank battle was rarely defeated, as the KwK 42 was powerful enough to destroy any enemy tanks at over 2,000m range. (Getty)

Above: Operation Market Garden (17 to 25 September 1944), the battle for the bridges at Arnhem, resulted in a rare victory for German forces positioned in the west. Allied intelligence was not aware that there were two SS-Panzer divisions in the area: both put up a dogged resistance and prevented the bridges being captured. The *Sturmgeschütz* is from 9.SS-PzDiv Hohenstaufen, one of the German units involved. (Bundesarchiv)

his unchallenged authority. However, a day later Keitel (known as '*Lakeitel*' – a play on words using his surname and *Lakai* [footman] as he was famous for his uncritical devotion to Hitler), had initiated a first proposal made by the *Organisationsabteilung*, and even identified those battle-worn units to be regrouped. This must have been a setback for Guderian, however when faced by the realities of July 1944, he realized that it was an understandable measure.

Some days later, orders were given to establish ten *Panzer-Brigaden* (PzBrig 101 to 110). These units were authorized to have three combat companies each with 11 Panthers in accordance to KStN 1777 (fG [modified]). This reduced structure was extended to the *Panzerjäger-Kompanie*, which was to be issued with 11 new Panzer IV/70 (V) tank destroyers.

The Panzer brigades had a strong PzGrenAbt equipped with more than 150 medium half-track vehicles, including 42 SdKfz 251/17 (armed with a 2cm anti-aircraft gun) and 10 SdKfz 251/9 (armed with 7.5cm StuK 37). However, the actual establishment of the Panzer brigades was totally different.

On 9 September, the commander of PzBrig 108 produced a somewhat critical leaflet, describing the tactical deployment of a PzBrig within his unit, using material submitted by the *Generalinspekteur der Panzertruppe*:

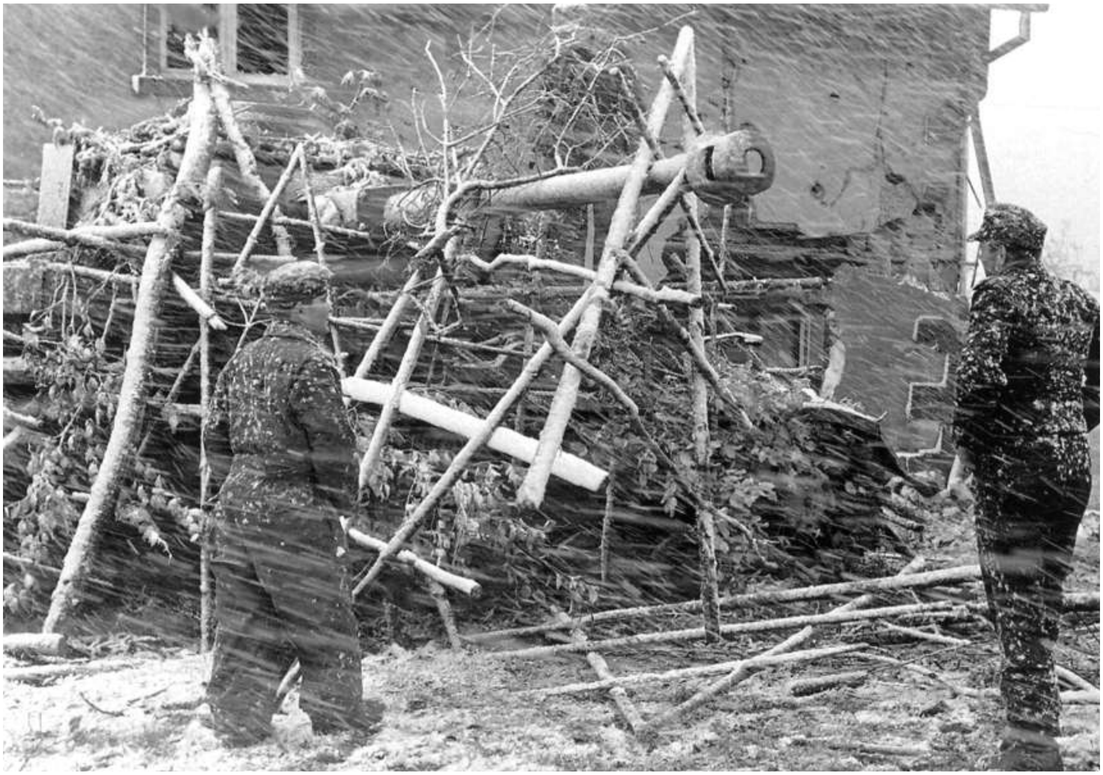
Information leaflet for the commitment of the Panzer brigade:

By order of the Führer, a number of *Panzer-Brigaden* were established, all with different organization and equipment.

How is PzBrig 108 equipped, and what does it lack?

1.) Organization
The brigade staff company with a reconnaissance section issued with half-track vehicles; a forward observer section with *Kettenkrad* and *Kübelwagen*, and signals section with half-track vehicles.
One weak PzAbt (three companies with 11 Panther each).
One PzJgStuGKp with 11 StuG, will be issued later [Panzer IV/70].
One strong PzGrenBtl (gep) with five companies.
One PzPiKp (two engineer platoons and one flame-thrower platoon).
Supply elements, including a workshop company and also a transport section with 20 3-ton trucks.

Below:
Arnhem: A *Sturmgeschütz* of 9.SS-PzDiv Hohenstaufen passes vehicles abandoned by Allied troops. It was important for a *Sturmgeschütz* to be supported by grenadiers when fighting through the streets of a town or village. (Bundesarchiv)



Above:
Battle of the Bulge: On 16 December 1944, Allied air forces were unable to fly any missions due to the adverse weather, and German commanders took advantage of the conditions to launch a counter offensive. For a short time, the *Panzerwaffe* prevailed over Allied forces until the weather changed on 23 December. Here a well-camouflaged PzKpfw IV of 116.PzDiv has been positioned in a wrecked house to provide defensive fire. (Anderson)

Therefore the mixed PzBrig is a composite of *Kampfgruppe* [combat group] in regimental strength, but not half the size of a *Panzerdivision* more like a prewar brigade.

2.) Weaponry
The PzBrig is equipped with a considerable number of different calibre weapons:
Panther with 7.5cm KwK L/70
PzJgStuG with 7.5cm StuK L/70 (still missing)
Maschinengewehr [MG] 42 in PzGrenBtl and PzPiKp
SdKfz 251/21 in PzGrenBtl
SdKfz 251/9 in PzGrenBtl
SdKfz 251/2 in PzGrenBtl (8cm mortar)
s *Wurfrahmen* 40 rocket launcher on SdKfz 251
Machinenpistole [MP] 44 for two PzGrenKp with *Sondermunition*

Thus the PzBrig's equipment comprises powerful flat-trajectory weapons and less powerful high-trajectory weapons (except for the 8cm mortar carriers which have slow rate of fire). Any provision for support artillery is totally missing.

Above:
Photographed in the early winter of 1944, a PzKpfw IV Ausf J from PzRgt 33, 9.PzDiv is fitted with *Panzerschürzen* fabricated from a mild-steel wire mesh. (Anderson)

3.) Reconnaissance
Light or medium reconnaissance cars suited for long-range operations have not been supplied. The half-track vehicle is unsuitable for the reconnaissance section as it is of limited use during darkness. A specialized vehicle for reconnaissance and scouting is vital.

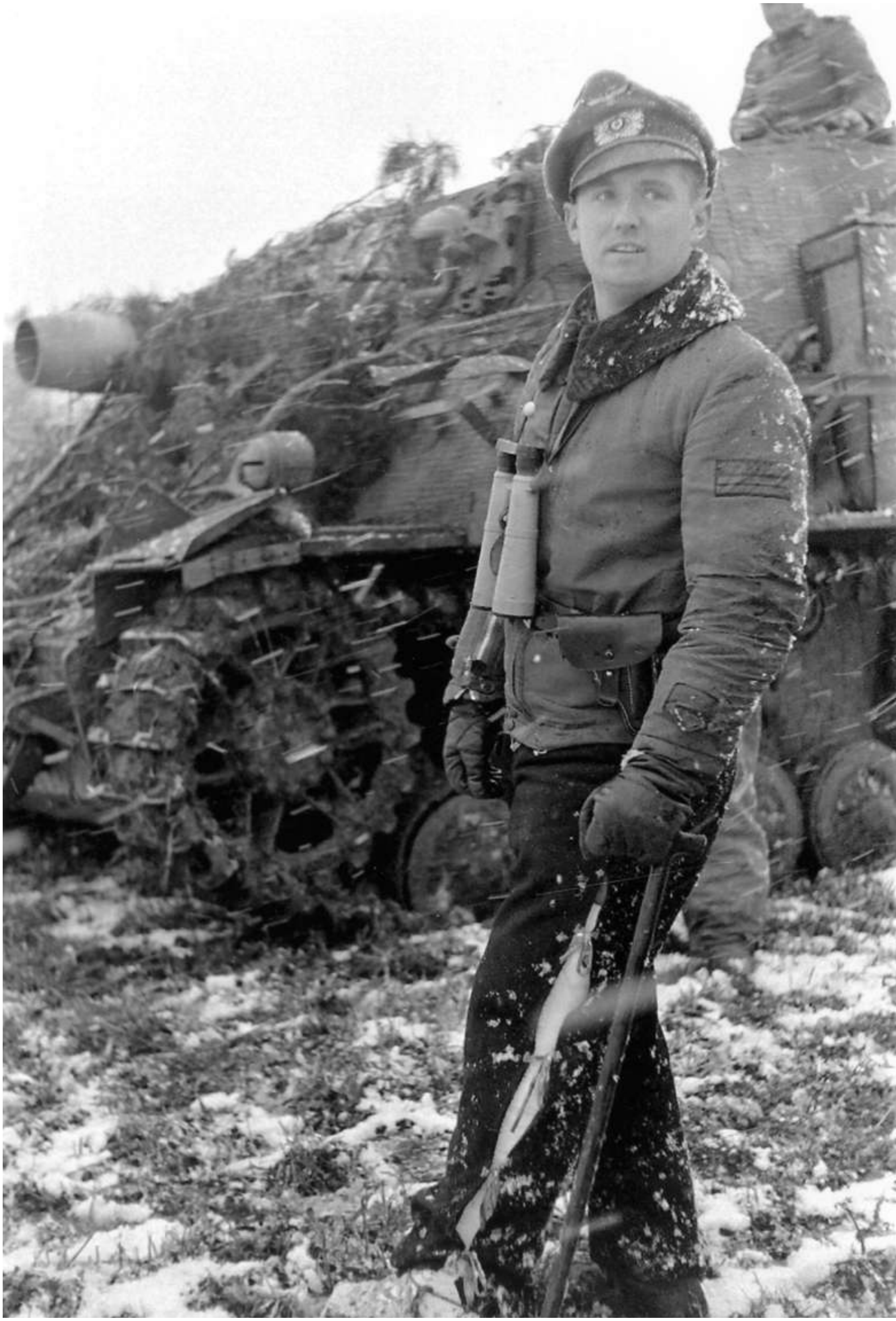
4.) Transport capacity
This is poor.

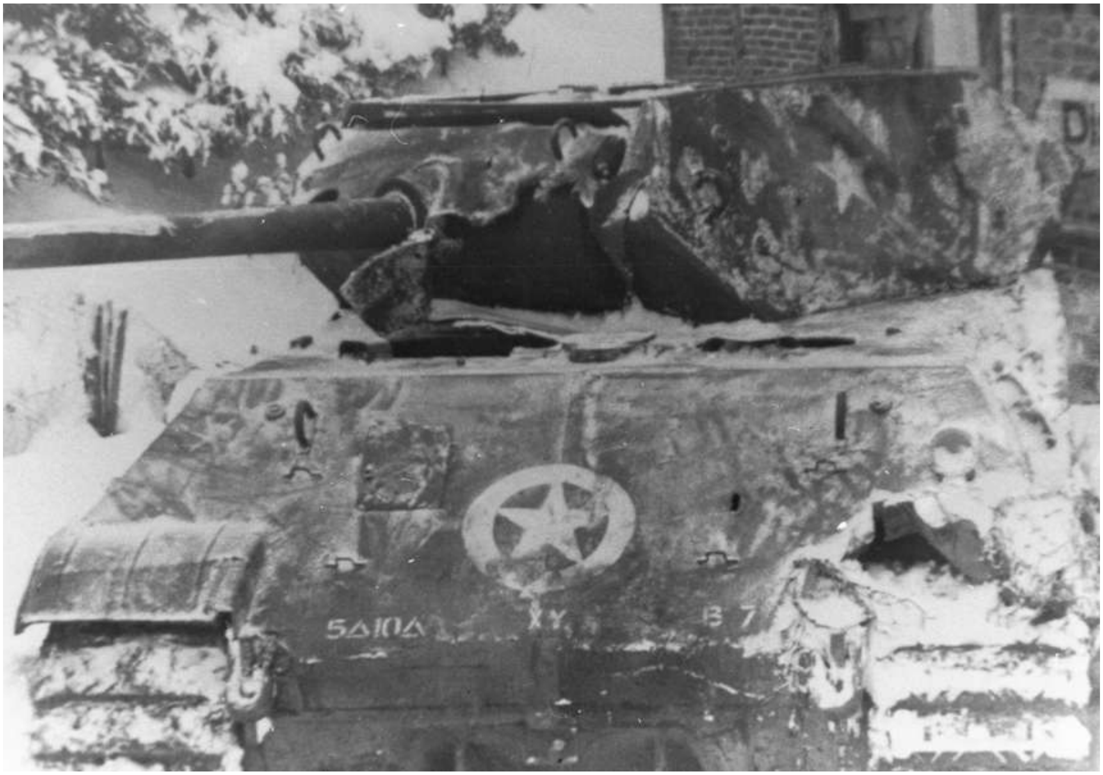
What can the Panzer-Brigade achieve?
The purpose of the PzBrig is for a mounted attack against a limited objective. The brigade is able to launch a counterattack intended to destroy enemy forces which have broken through. Its strength lies in mobility, firepower and armour. The decisive prerequisite for success is surprise and a concentrated attack by the entire PzBrig. The PzAbt will lead the attack and the half-track mounted battalion will follow closely. The battalion will not dismount.

Which commitment is not possible for the PzBrig?
The PzBrig must not be committed in a fragmented way. Its strength lies in the concentration of its firepower.

Left:
By 1944, the 7.5cm PaK 40 was the backbone of German anti-tank artillery units. The gun had a low profile and was very powerful. However, all towed anti-tank weapons shared the same disadvantage: The gun could be easily located after a few shots had been fired, necessitating a rapid change of position; an almost impossible task which would inevitably lead to the loss of gun and crew. (Getty)

Right:
Major Lemor, the commander of StuPzAbt 217, led his unit in the Ardennes offensive despite wearing a heavy cast on a broken leg. In the background is a late production *Sturmpanzer*, this was a true heavy assault weapon, but the type was of little use during the fighting in the west. (Anderson)





Above:
During the Ardennes offensive, a number of PzKpfw V Panthers were disguised to resemble (at a distance) the US Army's M10 tank destroyer. PzBrig 150 was established for the sole purpose of spreading confusion among Allied troops. (NARA)

> The PzBrig must not be divided to defend a sector. The PzGrenBtl must never dismount. In no case can the PzBrig be used to hold a sector for a long period.

It is evident that the commander of PzBrig 108 was not convinced by the new concept. Although principally combining fighting power with extreme mobility, the realities of the 1944 battlefield simply lacked any opportunities to commit the units as was originally intended. The absence of artillery made the Panzer brigade too dependent on other units.

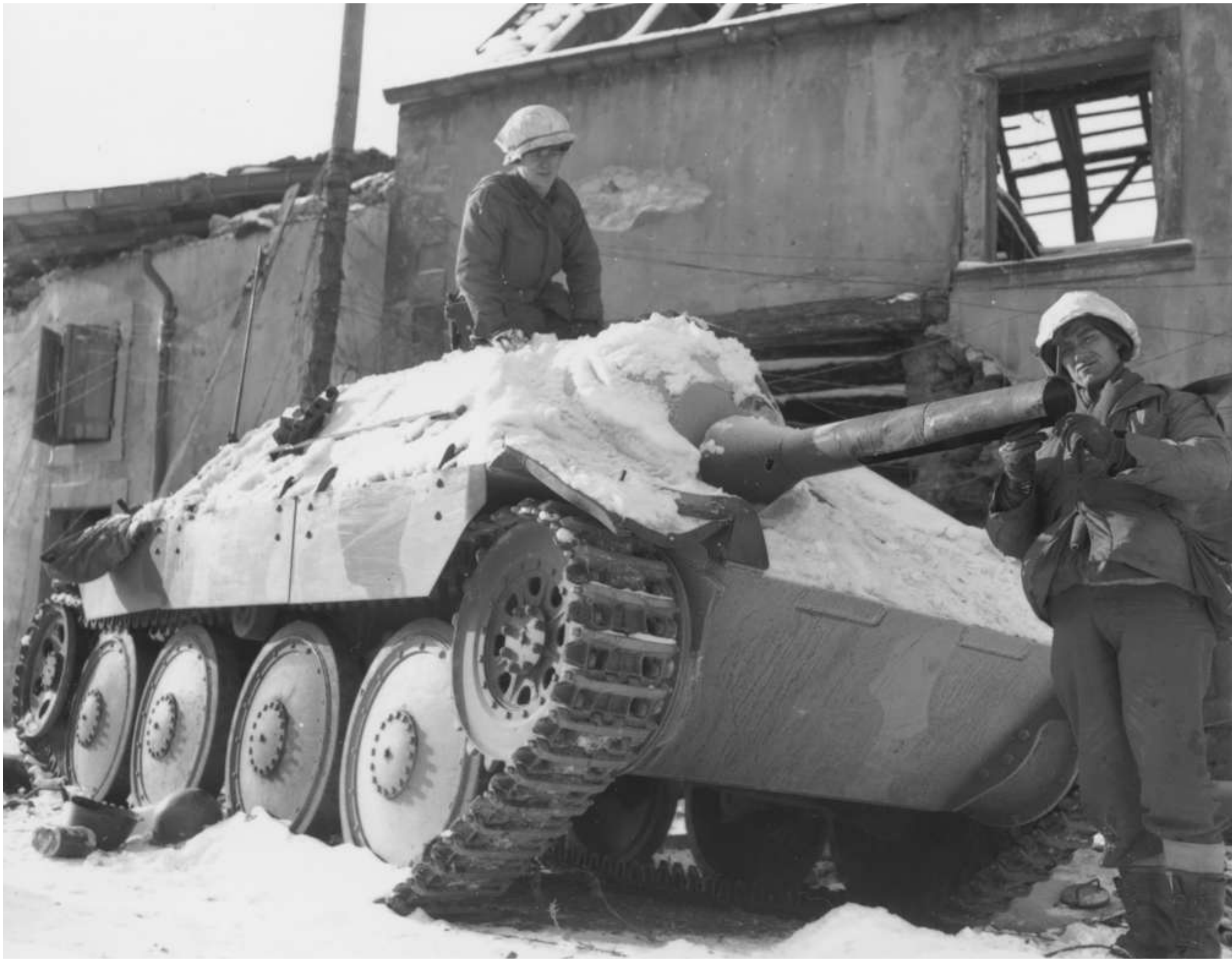
In September 1944, a *Leutnant* Schreiber of PzBrig 108 submitted a short, but telling report, which showed the problems with the commitment of a Panzer brigade:

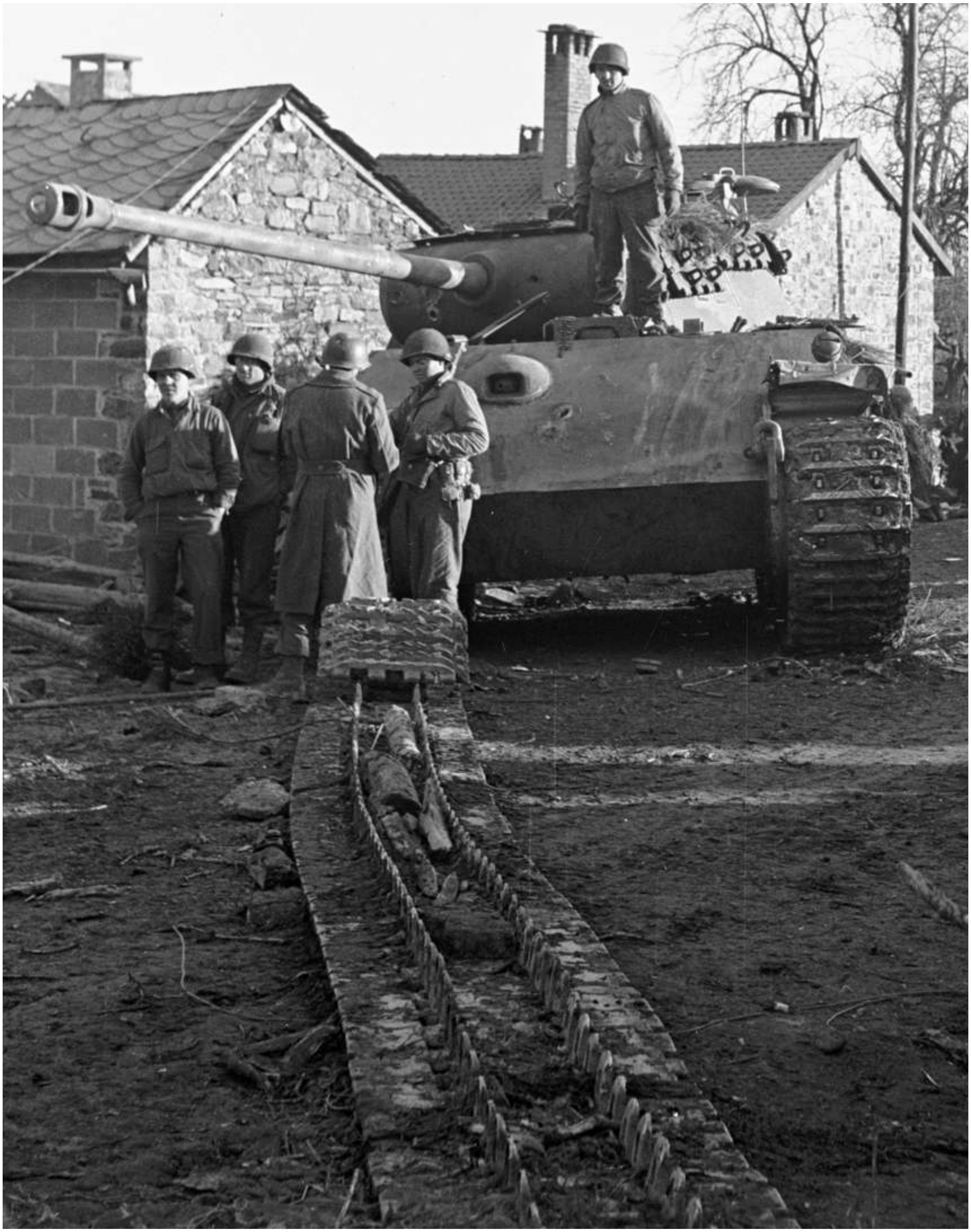
> Report of the first commitment by PzAbt 2 of PzBrig 108
>
> After an advance of 40km during the night of 18/19 September, PzBrig 108 prepared for battle in the Halsdorf area, 10km southwest of Bitburg. The assembly area was on top of a hill, which was apparently being observed by the enemy. The attack was launched without any artillery preparation. Our tanks advanced over a low hill towards the enemy positions. At ranges of 100 to 200m, the tanks received fire from anti-

> tank guns and tanks.
> Tank losses: 12 destroyed, and several damaged
> The *Panzergrenadiere*, which followed the tanks, suffered a heavy loss of troops and half-track vehicles.

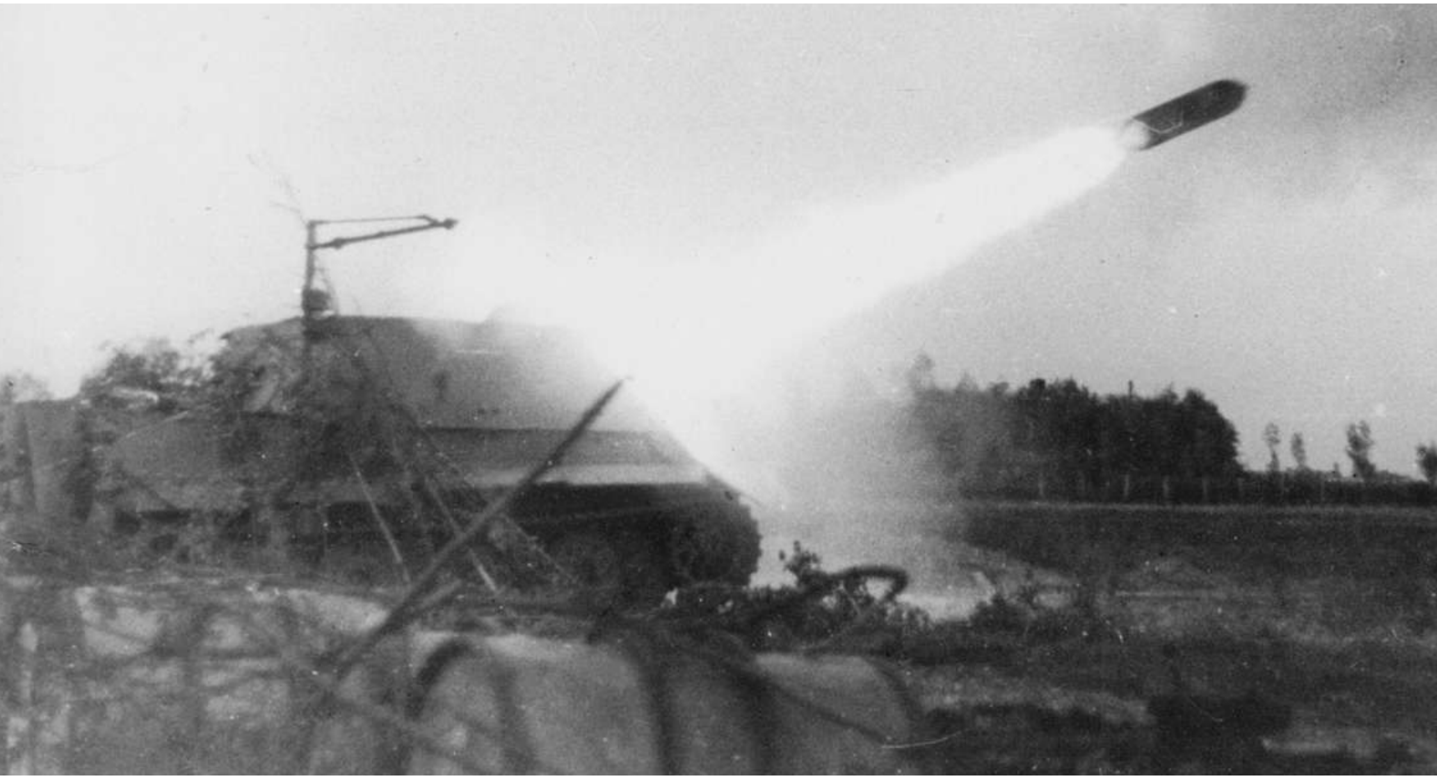
A first analysis of this short report reveals problems. The above attack seems to have lacked any preparation and the fact that PzBrig 108 chose an assembly area observed by the enemy can be judged as a great tactical mistake. The attack itself was pushed forward without support from heavy weapons, again a wrong decision by senior officers. It also appears evident that '108' was unable to utilize its firepower and mobility. Without preceding reconnaissance to build a feasible battle plan, and without preparatory artillery fire, the assault was destined to fail.

Below:
In an order dated December 1944, Hitler sent all available *Flammpanzer* (flame-thrower tanks) to the western front, and the conversion of an additional 20 *Panzerjäger* 38(t). Here two US soldiers inspect an abandoned *Flammpanzer* 38 from PzFlammKp 352. (US Signal Corps)





Above: An abandoned PzKpfw V Panther Ausf G being prepared for recovery by US Army engineers. The tank has received two hits from enemy fire on the sloped front but they have not penetrated the 80mm thick armour. (Getty)



Above:
The *Sturmtiger* (also *Sturmmörserwagen*) was possibly the next logical step in the development of the *Sturmpanzer* (assault tank). The type had 150mm thick frontal armour and mounted a 38cm *Raketenwerfer* (RW) 61 L/5.4 rocket launcher. The RW 61 had velocity of up to 250mps and fired a projectile, either high-explosive (HE) or hollow charge, to a maximum range of 5,500m. (Anderson)

Only short time after being established, and after a number of difficult combat missions, most Panzer brigades were disbanded; their equipment was then distributed to the remaining weakened Panzer divisions.

Into the Reich

In the months following D-Day, Allied forces pushed back the German occupiers and on 25 August, Paris was liberated. In the meantime, a US-led force had landed near Toulon on the Mediterranean coast. The invasion force moved rapidly up through southern France and by September had reached the Vosges region and the southern border of Germany.

On 21 October, US troops captured the first German large city, Aachen. German forces positioned around the city, including remnants of the *Panzerwaffe*, were unable to stop the advance.

Some 50km east of the city, the Hürtgenwald did force US troops to stop. Here in the forested, low mountains of the Eifel, German forces put up a dogged resistance; the terrain was totally unsuitable for armoured warfare. For once, US forces could not rely on their superior artillery or their airpower. The fighting continued until 10 February 1945, then the US Army could continue the advance to the river Rhine.

On 29 November 1944, *Generalleutnant* Horst Stumpff, the *General der Panzertruppen West* submitted his ideas to adapt *Panzerwaffe* tactics to the new challenges in the west.

Proposals for combat under the conditions faced in the west:

A.) Enemy tactics:

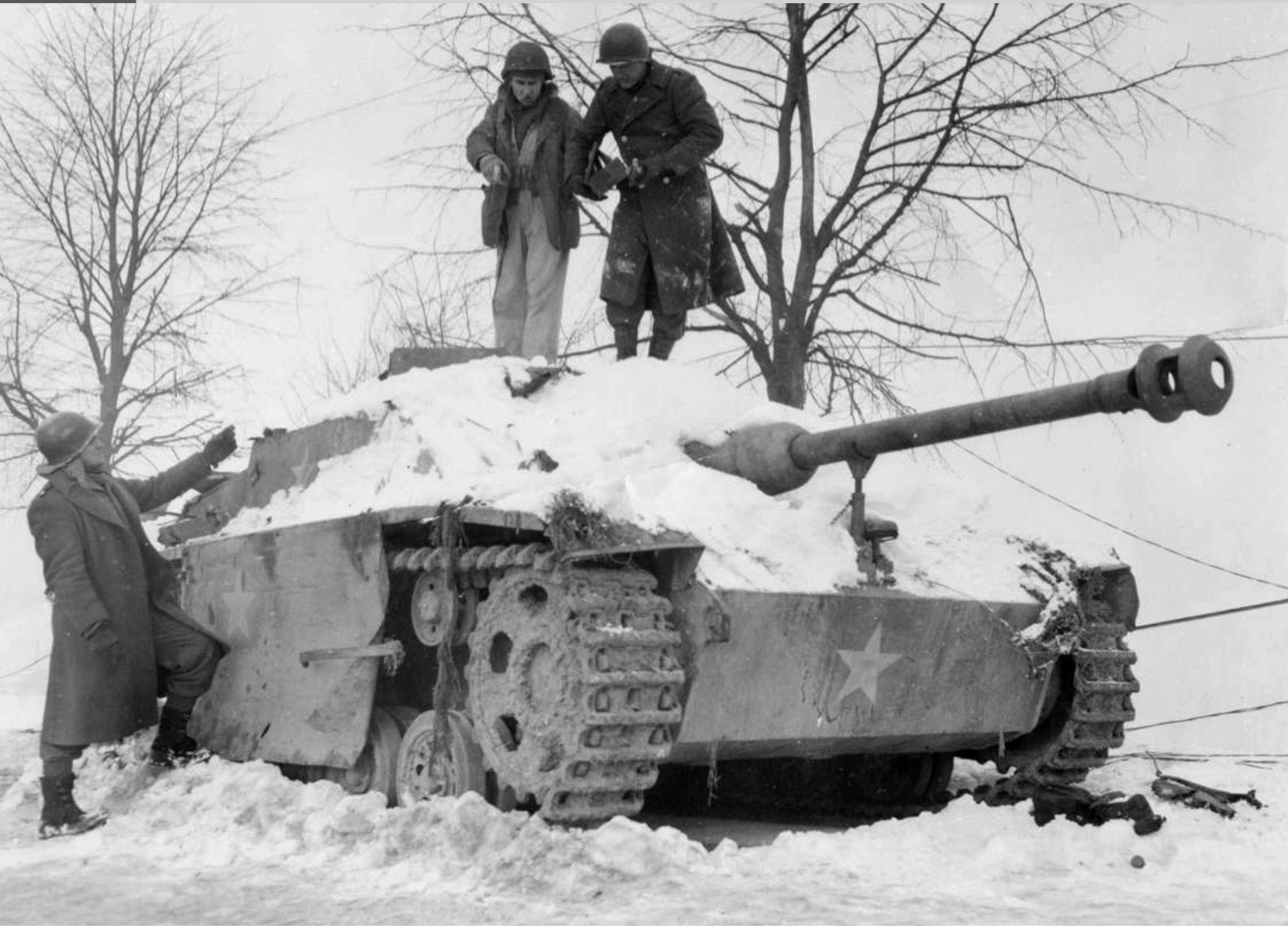
1.) The enemy will launch large assaults on a broad front, but only on very rare occasions. Normally he will attack in battalion or regiment strength over a narrow strip, driving tank wedges into our positions after heavy artillery and air preparation.
2.) The enemy concentrates on attacking our weakened areas, since he is always anticipating a counterattack. For this reason it is wrong to mass our forces in preparation for counterattacks in these areas. The enemy will inevitably destroy these forces.
3.) The enemy evades the effect of our artillery fire, and will occupy the main line of resistance with only a small force. Fully aware of his material superiority, he accepts small breeches in his positions. He will then blanket our spearhead attack with heavy artillery fire or massed commitment of his air force until our forces are shattered. Then he will launch a counterattack.

B.) Attack:

Our attacks are severely hampered. Due to a lack of reconnaissance means (airborne artillery observer, field observation battalions and companies, also sound detection squads) the enemy artillery positions cannot be observed, and subsequently not attacked.
Also an effective fight against enemy artillery is not possible due to limited stocks of ammunition. This leads to the following important demands:
Attacks by recognized methods can be launched only if the basic facts are known. Any attack can only be successful if the enemy's air force cannot operate (morning dawn and dusk, darkness, foggy and rainy days). The lack of airborne artillery observation will further affect the impact of the enemy artillery. Only a surprise attack during the night will have any chance of success, even without artillery preparation.

C.) Defence:

1.) The failure of our defences, especially the commitment of anti-tank weapons, has to be adjusted according the enemy's tactics.
2.) The enemy will support every attack by concentrated heavy artillery fire and air raids. For this reason our command unit must operate on a base-



Above:
PzBrig 150 also converted a number of *Sturmgeschütz*. Sheets of mild steel were attached to the superstructure and to the hull sides in an attempt to disguise the vehicle: the result was not convincing. (NARA)

type system be manned by a small force only. The bulk of the troops should be in staggered positions along the width of our line.

3.) Heavy weapons; these must not be used in the main line of resistance, or near to it, in order to avoid their destruction before the enemy's assault begins.
4.) The enemy's material superiority must be neutralized… Our forces have to evade any enemy artillery fire or air attack; any firefight at long or medium range must be avoided... All infantry weapons, anti-tank guns and tanks shall fight raid-like actions with combined fire only at close range (100 to 300m). This is necessary, because the enemy is able to smash all our weapons from long range by artillery and strafing aircraft… Any city, village or forest will have to be defended by close combat. Long-range defence is the task of the artillery.

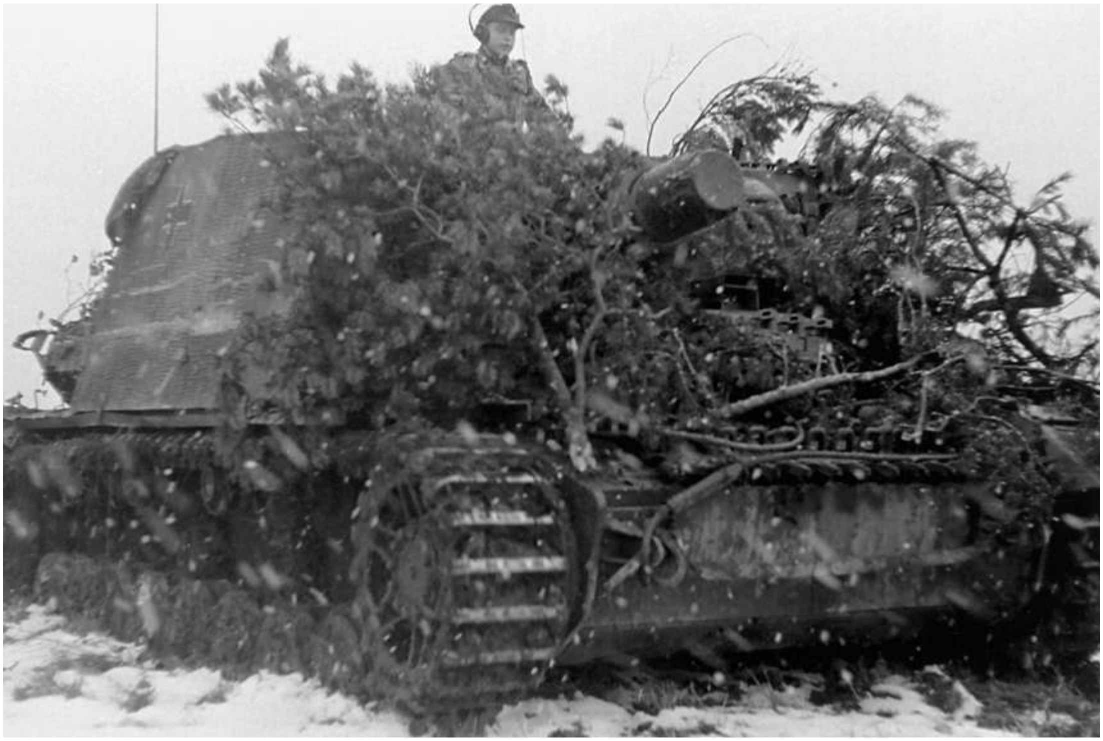
Loss of operational capabilities

The report confirms that the *Panzertruppe* had almost completely lost its ability to conduct large-scale operations. General Stumpff indeed demanded a return to basic infantry virtues; combat at very close range, supported by tanks and anti-tank guns. German assault tactics had been reduced to an absurdity.

While the situation on the eastern front became more and more difficult, Hitler came to the conclusion that only a decisive thrust in the west could possibly change the course of the war. It was thought that one significant military victory was necessary to thwart the anti-Hitler coalition. In short, the operational objective was to halt the forces threatening the western borders, and then begin an advance through Belgium, to capture the harbour city of Antwerp, which was important supply point for Allied forces.

Hitler, thought to be on the verge of insanity, was still able to enchant his fellow Germans, and inspire the *Wehrmacht*, and he was convinced that to win his obsessive struggle against Bolshevism he had to halt the menace in the west.

Below:
Towards the end of 1944, many *Flugzeugabwehrkanone* (FlaK) batteries were transferred to support German units struggling to repel Allied and Soviet forces advancing into Germany. (Ullstein Bild)



Above:
A *Sturmpanzer* of StuPzAbt 217 is being driven through driving snow. Steering the 24-ton nose-heavy vehicle on half frozen mud could end in disaster, as it could easily become bogged down. (NARA)

A final thrust

On 16 December 1944, German forces began their Ardennes offensive under the codename *Wacht am Rhein* (Guard at the River Rhine, a song that was an official anthem in 1871).

The main part of German tank forces was provided by SS formations (1. SS-PzDiv Liebstandarte Adolf Hitler, 2.SS-PzDiv Das Reich, 9.SS-PzDiv Hohenstaufen, 10.SS-PzDiv Frundsberg and 12.SS-PzDiv Hitlerjugend, reinforced by 17.SS-PzGrenDiv Götz von Berlichingen and their large numbers of infantry. Speed and surprise were important as fuel and ammunition was critically short.

The attack began in what appeared to be favourable conditions. After the recent German defensive success at Operations Market and Garden, Allied forces were busy regrouping in order to plan the decisive offensive into the Reich.

On 16 December, heavy drifting snow was falling as German artillery opened fire and the battle began. German forces began to advance over a front some 1,340km long with relative ease, as the bad had weather grounded US aircraft. After the important railway junction at Bastogne was reached, the US commanders rushed in reinforcements to stabilize the situation. At Christmas the weather began to clear, allowing US aircraft to

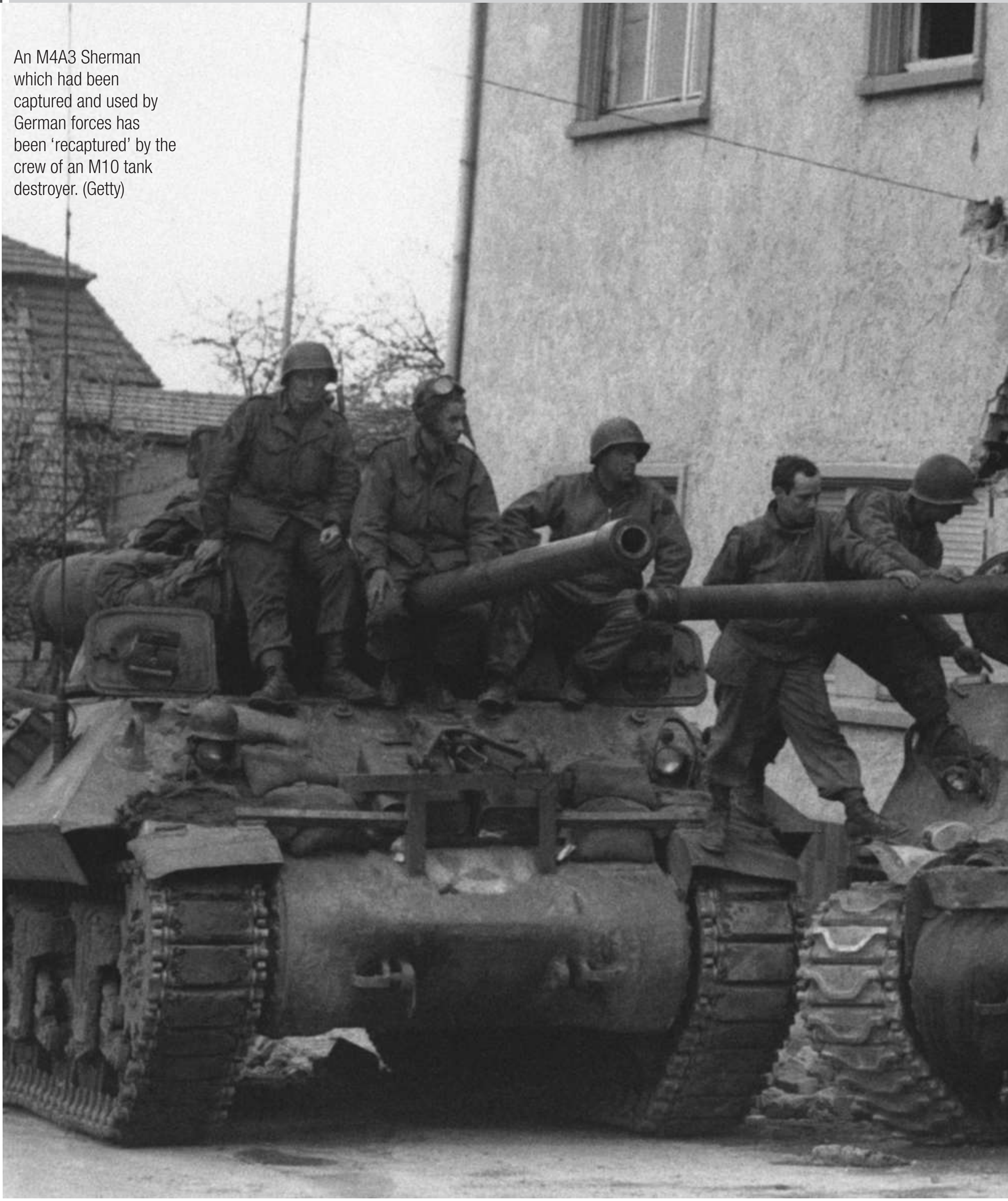
Left:
A *Sturmgeschütz* III Ausf G and other vehicles from 17.SS-PzGrenDiv Götz von Berlichingen have been surrendered to US forces during the Ardennes offensive. While the *Sturmgeschütz* remained effective for defensive street-by-street fighting in the east, the type was unsuited to the open mobile warfare on the western front. (Bundesarchiv)

fly again to begin re-supply drops and ground-attack operations. By turn of the year, the German offensive in the Ardennes halted. In January 1945, a last desperate attempt, *Unternehmen Bodenplatte* (Operation Floorplate), by German forces to continue their advance also failed; during the month all the territory gained in the offensive was re-occupied by the US forces.

The road into Germany was open.

German Tank Strength West 10 April 1945						
PzKpfw IV (lang)	Panzer IV L/70 (lang)	PzKpfw Panther	PzKpfw Tiger	StuG	PzJg 38	PaK Sfl (SP anti-tank gun)
11	2	24	20	61	70	?

	German Tank Strength West, 15 December 1944						
PzKpfw II	PzKpfw III (various)	PzKpfw IV (lang)	PzKpfw Panther	PzKpfw Tiger	StuG	le PzJg IV	PaK Sfl (SP anti-tank gun)
2	19	391	336	79	410	62	?



An M4A3 Sherman which had been captured and used by German forces has been 'recaptured' by the crew of an M10 tank destroyer. (Getty)

BE ERIE

CHAPTER 8

BAGRATION: THE SOVIET ADVANCE

In preparation for the coming battle on the Kursk salient, the Red Army had assembled a powerful force, both in terms of personnel and equipment, in a system of fortified trenches. As German units made their advance, Soviet infantry and anti-tank gun teams, backed by superior numbers of tanks, were easily able to hold off the attackers.

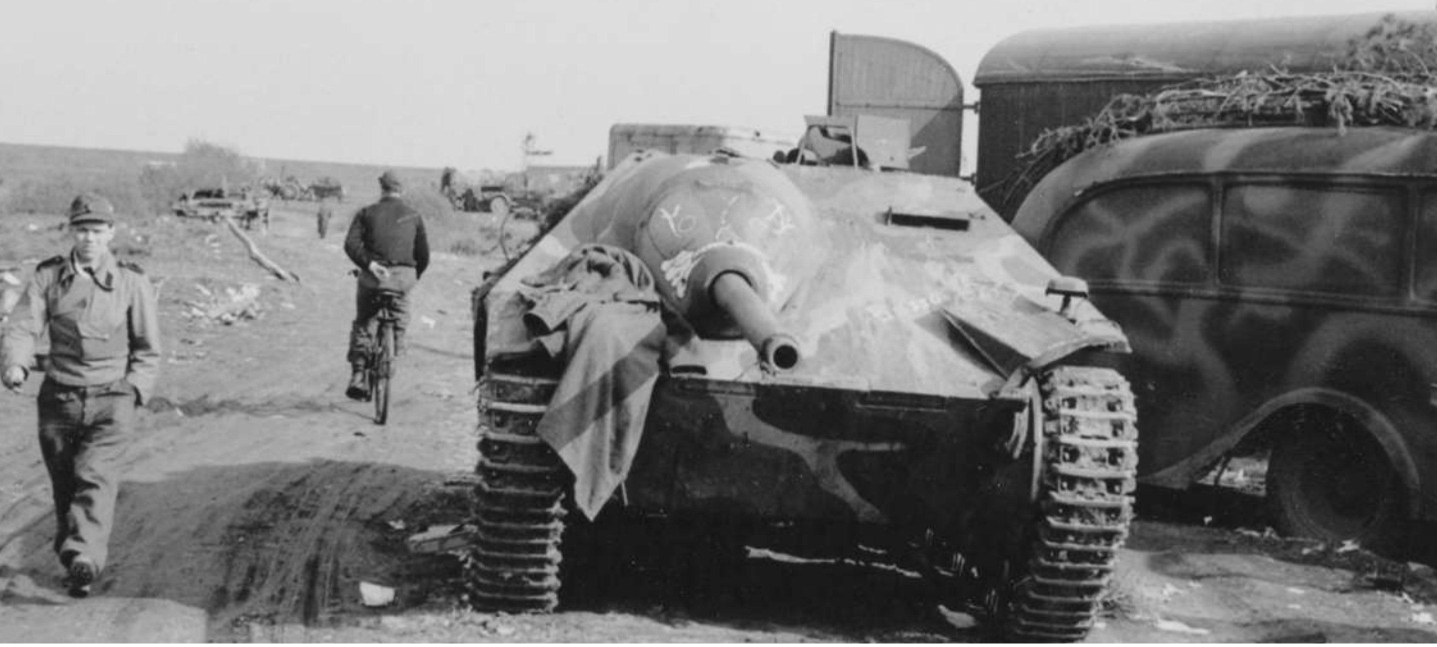
The staggered and deeply dug-in anti-tank gun positions (some 100 guns along a kilometre front) and tanks proved to be impenetrable to the German units; a rifleman could stop an attacking German soldier, an anti-tank rifle gunner could damage a German tank, and an anti-tank gun could stop or destroy a PzKpfw IV or *Sturmgeschütz*. However, the Soviet defenders were equipped with poor-quality weapons and their commanders remained tactically unskilled. Subsequently, large formations of infantry were deployed resulting in tens of thousands of men being killed.

One of the lessons learned by German commanders, during the eastern campaign, was that the Soviet Union was capable of quickly replacing lost weapons and tanks. Also, possibly more important, all troops killed or captured in battle appeared to be replaced with equal ease.

The Battle of Kursk ended in a stalemate, leaving German forces only slightly weakened. However after Allied forces had landed in Italy, the lack of strategic reserves forced German military planners to transfer battle-hardened units to the new front.

The situation for German forces on the eastern front worsened: Soviet forces launched several counterattacks and were able to force the Germans to retreat on all fronts. By the autumn of 1943, a line from Smolensk to Kiev and south to Dnipropetrovsk had been liberated.

Left:
German troops follow a PzKpfw VI Tiger Ausf B during the winter 1944/45. Despite being equipped with superior tanks, the *Panzertruppe* was unable to halt the Soviet advance in the west and Allied forces at the border of the Fatherland in the east. (Getty)



Above:
The *Panzerjäger* 38(t) armed with the 7.5cm PaK 39 L/48 anti-tank gun was a cost-effective tank destroyer fabricated on the chassis of a Skoda-built PzKpfw 38(t). Although having relatively thin armour, it proved to be a very useful weapon on the battlefront. A crew member has painted a strange-looking face on the gun mantlet; a common practice among those operating the type. (Anderson)

New weapons for the enemy

Between 1942/43, the German armaments industry began a new chapter in the design of weaponry, as the result of the unexpected appearance of more modern Soviet T-34 and KV tanks on the battlefront. Subsequently, the *Panzertruppe* made an urgent request for the design and production of more sophisticated and powerful tanks to establish a significant and lasting superiority on the battlefield: the PzKpfw V Panther medium and the PzKpfw VI Tiger heavy tank entered service in early 1943. After extensive efforts to eliminate technical and mechanical problems, each type proved to be a most effective weapon system which, when deployed using *Panzerwaffe* tactics, was far superior to all enemy tanks then in service.

As history would show any such superiority would be short-lived as, inevitably, the enemy would seek to design a more superior weapon. This fact was very obviously clear to German military planners, and the decision was made to initiate the design and development of more powerful tanks while at the same time production teams worked hard to remedy the numerous mechanical problems on the Panther and Tiger.

The Red Army

Although the Red Army had introduced the more manoeuvrable and better armed T-34 medium and the KV heavy tanks into service, their tank forces still lacked the strategic and tactical skills to halt advancing German tank forces. It would take almost two disastrous years before their tanks could fight with some equality: By the Battle of Kursk in 1943, only a few simple improvements had been introduced.

Temporary solutions such as the SU-122 (using the T-34 chassis) and SU-152 (using the KV-1 chassis) were introduced, and these gave their troops weapons that were capable of defeating German armour. However, when the *Panzerwaffe* introduced the powerfully armed and heavily armoured Panther and Tiger tanks on the battlefront, the Soviets had to rapidly improve their tanks.

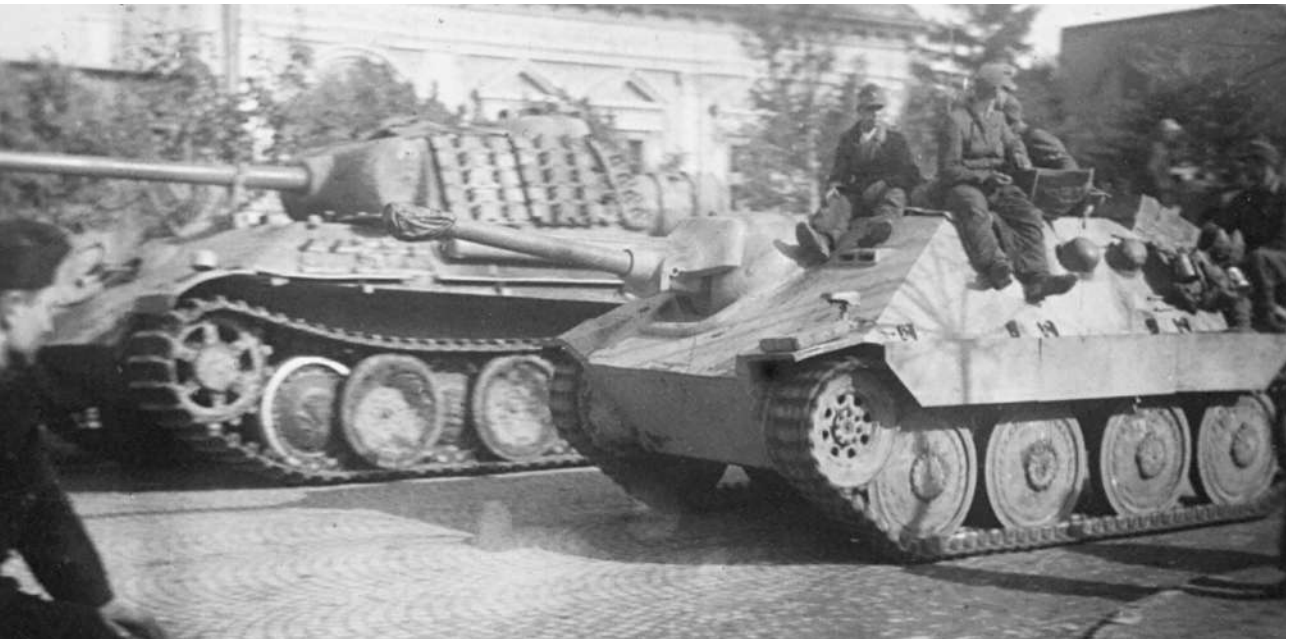
85mm D-5T tank gun

One important improvement for their tanks to defeat German armour was the introduction of a more powerful gun. In 1943, the 85mm D-5T, which was sufficiently powerful to combat all contemporary German tanks, became available in limited numbers. The KV-1s, the current version of the KV-1 tank, which had a slightly enlarged turret, proved to be suitable for mounting the D-5T gun. Designated as the KV-85 the type entered production and some 140 were built.

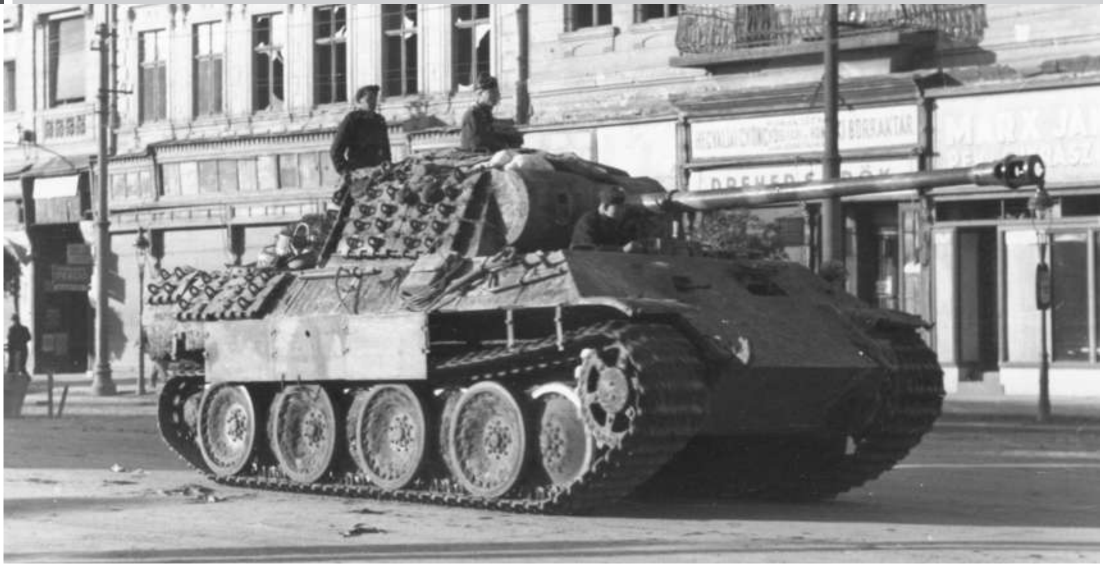
In many German after action reports, the KV-85 was described as a tank which was difficult to defeat.

122mm D-25 T tank gun

After a short time the KV-85 was redesigned and became the JS-85. At approximately the same time as Soviet military planners decided to install the 85mm gun in the T-34 (resulting in the T-34/85), a request was made for



Below:
A crew from 23.PzDiv has attempted to improve armour protection on their PzKpfw V Panther Ausf G by attaching spare track links to the sides of the turret. The practice was of little value and could be deemed dangerous as it slowed the turret traverse, especially when operating over sloping terrain. (Anderson)



Above:
A PzKpfw V Panther Ausf A from 23.PzDiv in a Hungarian city. The tactical number has been painted on the tracks hanging from the sides of the turret, making it very difficult to spot; note the gun mantlet has received a direct hit which did not penetrate. (Anderson)

an even more powerful tank gun. The promising 100mm gun was in short supply, so a 122mm gun was chosen and designated the D-25 T. It was very effective when firing high-explosive (HE) rounds and, although not a dedicated anti-tank weapon, it was sufficiently powerful to destroy all enemy tanks at long range when firing armour-piercing (AP) rounds.

The Allies

From 1943, the M4 Sherman became the standard tank in US service and large numbers were supplied to Allied forces. At around that time US military planners developed the 'Tank Destroyer Doctrine'; the formation of dedicated units equipped with specialized tanks to combat of enemy armour. In September 1942, the M10 tank destroyer entered service followed by the M36 in October 1944: both types used the M4A2 or M4A3 chassis. The Buick-built M18 Hellcat entered service in October 1944, and although being armed with a 76mm Gun M1 (later 76mm M1A2) it was the most effective US-built tank destroyer of World War II.

76mm gun M1

In September 1941, the specification for a more powerful tank gun (3-inch Gun M7) was issued and was developed during 1942 before being designated 76mm Gun M1 on 17 August 1942. However, production difficulties delayed its availability until February 1944, but by the summer of that year increasing numbers of 76mm-armed M4 Sherman tanks began to be delivered, including significant numbers to the Red Army defending the Soviet Union.

Thus armed, an M4 Sherman could now defeat the PzKpfw IV and the *Sturmgeschütz*. However, the 76mm gun could not defeat a Panther or Tiger in a front-on attack.

90mm Gun M3

The 3-inch M1918 was primarily an anti-aircraft weapon, but it was decided to develop it as the main armament for the in the M36 tank destroyer. Designated 90mm Gun M3, the weapon had a ballistic performance comparable to that of the 8.8cm KwK 43 mounted in the Tiger Ausf B.

In late 1944, a new tank, the M26 Pershing was ready to enter production and due to availability it mounted a 90mm Gun M3. The Pershing was used against weakened German forces during the final months of the war.

Ordnance QF 17-Pounder gun

During the first years of World War II, the British army lacked a modern and effective anti-tank weapon. During the final period of fighting in North Africa, 48 Churchill tanks were modified by mounting the 75mm Gun M2/M3 taken from mine-damaged M4 Sherman tanks; subsequently a total of 200 (known as NA75) were converted and a number were used with some success in Italy. However, in 1941 the design of a new anti-tank/tank gun was initiated and development continued through 1942. In 1943, the Ordnance Quick-Firing 17 Pounder (QF 17pdr) entered production, but there was not a British tank in service with a turret large enough to mount the gun (the Cruiser Mk VIII [A30] Challenger was undergoing trials). However, it was found that the slightly larger turret of a M4 Sherman could accommodate the gun. In service the type was designated Sherman 1C (M4), Sherman 1C (Hybrid) and the Sherman VC (M4A4) and was universally known as the 'Firefly'; over 2,000 were built. The same weapon was mounted on the Self-Propelled, 17pdr Valentine, Mk I, Archer anti-tank gun. The QF 17 pdr was also mounted in British M10 Achilles tank destroyers.

Penetration using high performance ammunition	Country of origin	Range 100m	Range 500m	Range 1,000m	Range 1,500m	Range 2,000m
7.5cm KwK L/48	Germany	126	108	87	69	63
7.5cm Kwk L/70		194	174	150	127	106
8.8cm KwK L/56		170	155	137	122	110
8.8cm KwK L/71		237	217	193	170	152
7.62mm F-34 L/41.5	Russia	109	79	49	44	39
85mm D-5T L/53		124	100	80	75	65
122mm D-25T		135	125	120	110	100
75mm M2 L/40	USA	n/a	74	67	60	54
76mm M1A1 L/55		n/a	157	135	116	98
90mm M3 L/50		n/a	221	199	176	156
17 Pdr QF gun Mk IV	Great Britain	n/a	208	192	176	161

The performance data was taken from original German sources found in NARA, a Russian standards publication and the work of the US author Hunnicut. Shown are the performances using the best available ammunition, impact angle 30°. Usage of this ammunition (mostly APCPC) was in all involved nation's forces was restricted due to the high production costs and corresponding low supply.

Above:
The *Panzerjäger* 38(t) was an agile vehicle which had excellent 60mm frontal armour, 20mm at the sides, but the top was only 8mm thick. The type was perfect for hit and run tactics. (Hoppe)

New tanks enter service

In early 1943 the 8.8cm L/71 gun, which had a formidable performance, entered service. The weapon was designed for installation in a conventional tank (KwK 43), or as a towed anti-tank gun (PaK 43) which could also be mounted in a tank destroyer. The first vehicle to be produced which mounted this weapon was the *schweres Sturmgeschütz* 'Ferdinand', but although it was a powerful weapon the type was not a total success as the Porsche-design chassis and drive system was plagued with numerous mechanical problems. The 8.8cm PaK 43/3 L/71 was also mounted in the *Jagdpanzer* V *Jagdpanther* tank killer.

Right:
The introduction of super-heavy vehicles (by 1944 standards), including the PzKpfw VI Tiger Ausf B (69 tons) and *Jagdpanzer* VI *Jagdtiger* (72 tons), raised serious problems for recovery units. Alert to the problem, tank manufacturer Henschel began a series of trials. Here a *Jagdtiger*, is being used to recover a Tiger Ausf B, although this could easily cause mechanical damage. (BAMA)

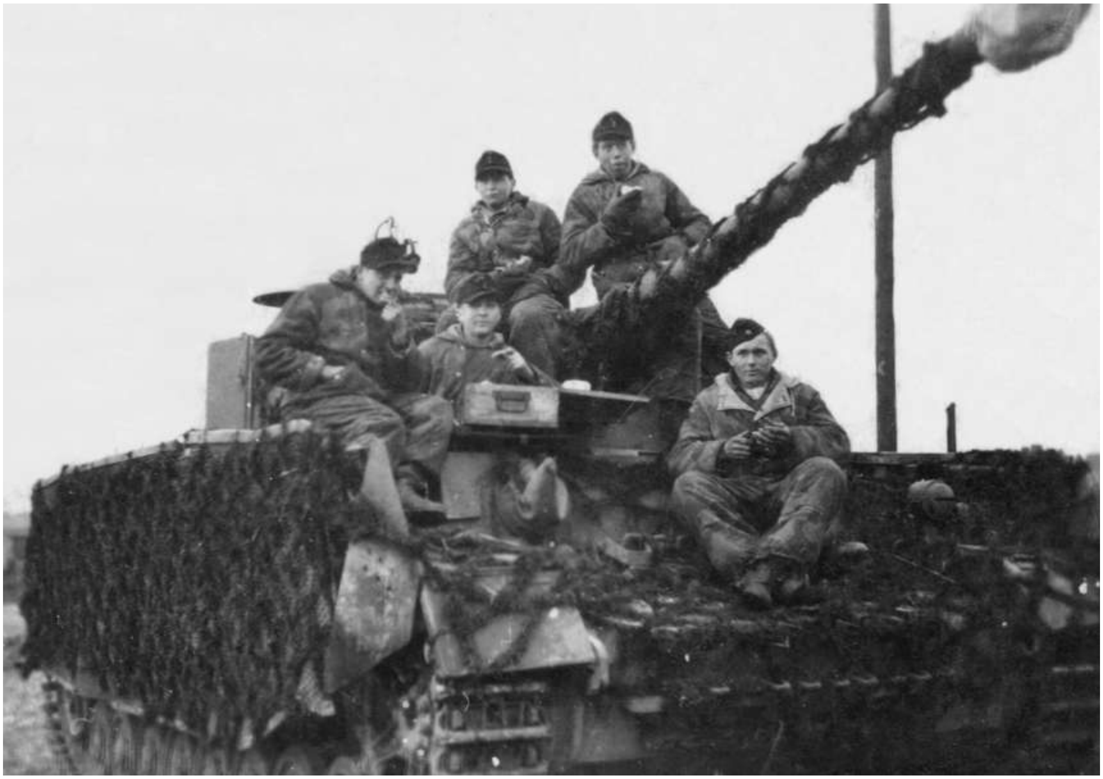
However, the gun was also selected as the main armament for the PzKpfw VI Tiger Ausf E, which became the standard tank for the heavy tank battalions. Also a new heavy tank entered the development stage at the beginning of 1943: The Tiger Ausf B (or Tiger II also *Königstiger* [King Tiger]) used an amalgamation of all the best features of Germany's most effective tank designs; the Tiger Ausf E and the PzKpfw V Panther. Protection on the Tiger Ausf B was equal to that of the Ausf E, but had sloping armour (150mm at the front and 80mm at the sides and rear) copied from the Panther. The result was the PzKpfw VI Tiger Ausf B, a heavily armoured tank which mounted a powerful and accurate gun able to destroy most enemy tanks at very long ranges.

However, all this was reached at the cost of mobility as a combat-ready Tiger Ausf B weighed over 70 tons. Unit commanders on the battlefront had to evaluate the terrain very carefully before sending the heavy tank into action. All too often the recovery of a bogged-down Tiger B proved to be impossible, even by using a *Bergepanther* armoured recovery vehicle.

The Tiger Ausf B was certainly the most powerful tank built in World War II, but with less than 500 tanks produced it did not play a decisive role in the battle.

From 1939 until end of the war, the main burden of the fighting on all battlefronts had fallen to units equipped with PzKpfw IV or the *Sturmgeschütz*.

Below:
A PzKpfw IV Ausf J fitted with the latest type of mesh-wire side skirts; the crew has weaved pine foliage into the mesh to camouflage the tank. Although it was outclassed in terms of firepower and armour by the T-34/85, it could be used with much success by an experienced commander employing proven Panzer tactics. (Anderson)



Above:
A parade at a training establishment in Bad Fallingbostel to commission a new Panther unit: a member of the Nazi organization is in attendance. The crews would have received just a basic training with limited practice on tanks due to a shortage of fuel and an insufficient number of experienced driving instructors; this would have to be completed when the unit arrived at the frontline. (Anderson)

The 7.5cm KwK 42 L/70 mounted in the PzKpfw V Panther was also a very effective gun (the British QF 17 pdr had a similar performance) and around 1942, a proposal was made to mount this gun in the PzKpfw IV and the *Sturmgeschütz*. However, this proved technically impossible.

In mid-1944, the gun was finally mounted in the *leichte Pänzerjager* (le PzJg) IV. Designated as the Panzer IV/70 V (V – manufactured by Vomag), this tank was originally allocated to the short-lived Panzer brigades and then to tank destroyer companies in selected Panzer divisions and Panzer grenadier divisions. A similar type, the Panzer IV/70 (A) used a production PzKpfw IV hull and was designed by Alkett, but built at Nibelungenwerke. Most were delivered to StuG brigades.

1944 – *Heeresgruppe Nord*

At the beginning of 1944, German forces on the eastern front were facing disaster. *Heeresgruppe Nord* had only three *Sturmgeschütz-Abteilungen* supported by 13 infantry battalions also *Luftwaffe* field units and their StuG detachments. Except for the Tiger-equipped s PzAbt 502, no regular tank unit was available to face certainly superior Soviet forces.

On 27 January 1944, after 872 days, *Heeresgruppe Nord* was forced to lift the siege of Leningrad. The Red Army had previously made numerous attempts, in the area around Lake Ladoga, to relieve the city, but these failed leaving vast numbers of their troops dead. However on 18 January, Soviet

German tank strength *Heeresgruppe Nord*, 1 January 1944			
	PzKpfw Tiger	*Sturmgeschütz*	*Sturmhaubitze*
Operational	17	128	6
In need of repair	12	55	0

forces attacked and opened a corridor into the city and subsequently forced the surrounding German troops onto the defensive.

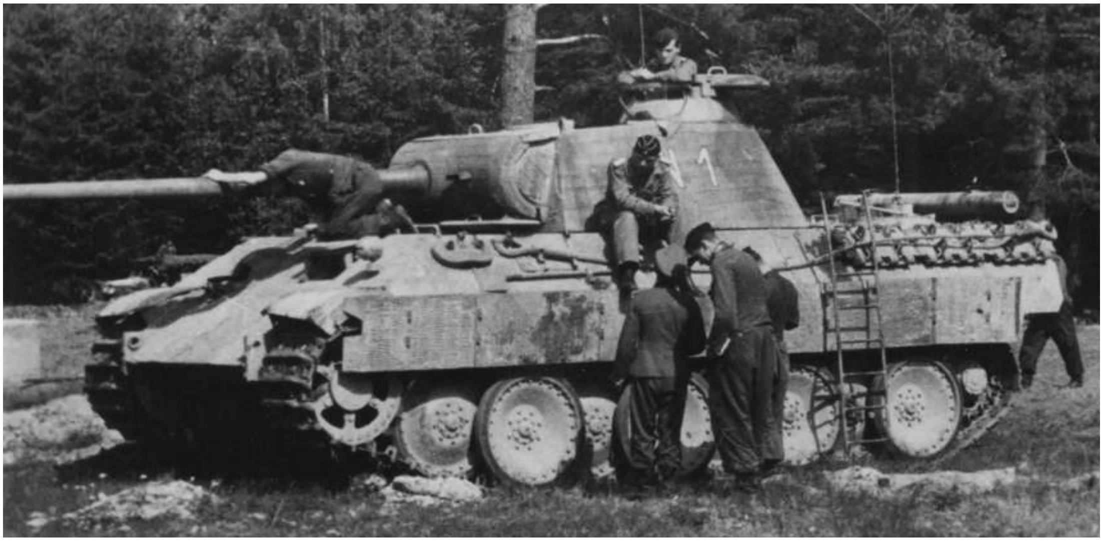
This unfavourable environment forced German units to question in general the principles of their proven tank tactics.

However in February 1944, the *General der Infanterie* sent a memorandum to s PzAbt 502:

> Notes for the commitment of tanks:
>
> A.) Principles:
>
> 1.) The tank unit is the weapon of the front-line commander. It will be committed at the focal point of the attack.
> 2.) The most important principle is: *Nicht kleckern, sondern klotzen*.
> 7.) For a successful commitment it is necessary to establish a full and mutual understanding. The tank leader has to understand the infantry's situation; equally the infantry leader has to understand the tanks.

'*Nicht kleckern, sondern klotzen*' (do things in a big way), was a phrase frequently used by Guderian. In attack situations, he demanded the use of all available means (tanks) to effectively reach an objective.

Below:
A *Panzerbefehlswagen* (PzBflswg) Panther command tank from the signals platoon of PzRgt Grossdeutschland. The vehicle has received a coat of Zimmerit, even on the side skirts. Note the *Sternantenne* (star antenna) and the armoured mounting on the engine deck. Also, the container for the gun-cleaning equipment has been relocated to the rear of the engine deck; a common feature on most of the unit's Panthers. (Anderson)



However, with the knowledge that the combat strength of the *Panzerwaffe* had been decisively weakened, the attack tactics had to be altered to allow an orchestrated withdrawal to be achieved.

In a further report from *Heeresgruppe Nord* dated February 1944, an alternative interpretation of standard tank tactics emerged:

> Deployment of tanks on the frontline in support of the infantry:
>
> The present situation at the eastern front has repeatedly led to a deviation from the principles of the concentrated deployment of tanks. The reasons were:
>
> – Long-term defensive battles, which led to the infantry being overstretched.
> – The weakly-defended defensive front.
> – The limited combat strength of the grenadiers
> – The relative width of the main line of combat
> – The lack of anti-tank weapons
>
> When the above factors are applied, tanks must be used to reinforce the infantry, but for a limited time only.

Even if the above was not rigidly enforced, it dealt a severe blow to the *Panzerwaffe* as senior officers slowly realized that the situation called for a change. The complete absence of Panzer divisions as armoured spearheads on the northern front proved that there was a growing inability to mount even a limited offensive operation. Without an armoured spearhead, supported by assault guns and infantry, it became impossible to mount any counter-attack missions.

Below:
German tank crews eventually learned how to defeat the JS-2, the Red Army's latest heavily armed and armoured main battle tank, by improving their tactics as the 7.5cm KwK L/48 gun was no longer powerful enough to defeat Soviet heavy armour in a head-on attack. The photograph was taken in the Oderbruch after *Schlacht um die Seelowen Höhen* (The Battle of Seelow Heights) in April 1945. (Thomas)

Above:
The crew of this late production *Sturmgeschütz* III has used large sheets of white cloth to camouflage the vehicle. Any offensive or defensive action involving *Sturmgeschütz* would always be supported by grenadiers. (Schneider)

After the Soviet breakthrough at Leningrad, *Heeresgruppe Nord* was forced onto the defensive, and the continuing assault was strong enough to push German forces more than 200km to the west and south, abandoning their established fortified positions as they retreated. However, the Red Army's intended encirclement of the 18.Army failed, allowing German forces to regroup. Following the retreat, *Heeresgruppe Nord* prepared new defensive positions along the river Narva.

If sufficient armoured forces were available, and if weather conditions were suitable, then Panzer tactics could still be effective. In August 1944, Major Schwaner commander of s PzAbt 502, within *Heeresgruppe Nord*, reported on his unit's combat activity during June:

> 24 June 1944:
> Successes:
> 20 tanks (T-34 and KV-1) and 15 anti-tank guns destroyed. Two battalions of enemy infantry killed.
> Own losses: Two PzKpfw VI (Tiger); no personnel lost.
>
> 27 June 1944:
> Successes:
> Two SU-152, two KV-1 tanks and four 122mm Howitzers destroyed; also

Above:
Men of PzDiv Feldherrnhalle look at their *Kesselkalender*, a homemade calendar in the form of a temperature gauge, during the siege of Budapest. Despite three attempts to break the encirclement (Operations Konrad I to III) by 6.Army, which included IV.SS-Panzerkorps, German and Hungarian forces remained trapped. However, the Soviet advance to Vienna was delayed for 50 days. (Ullstein)

> countless enemy infantry weapons crushed and destroyed. Some 500 enemy troops killed.
> Own losses:
> Seven PzKpfw VI (Tiger) immobilized by enemy fire, five were recovered during the night. Three men missing in action, six wounded.
>
> 28 to 30 June 1944:
> Successes:
> Two KV-1, and two Shermans also several enemy infantry weapons destroyed. Many enemy troops killed.
> Own losses:
> Two PzKpfw VI (Tiger) immobilized by enemy fire; both were destroyed by our own fire, since recovery was impossible. No personnel were lost.

Between 24 and 30 June the unit destroyed 25 tanks and two heavy assault guns for the loss of three Tigers. The loss of significant numbers of Soviet infantry is vastly disproportionate. During the next deployment, between 4 July and 27 July, the statistics were even more significant: 84 tanks (among them numbers of T-34/85 medium and JS-1 heavy tanks), one heavy assault gun and 71 anti-tank guns were destroyed. The Germans lost two Tigers and a motorcycle. According to the report, the Soviets lost more than 1,200 troops, compared to three men from s PzAbt 502.

German tank strength *Heeresgruppe Mitte*, 15 June 1944

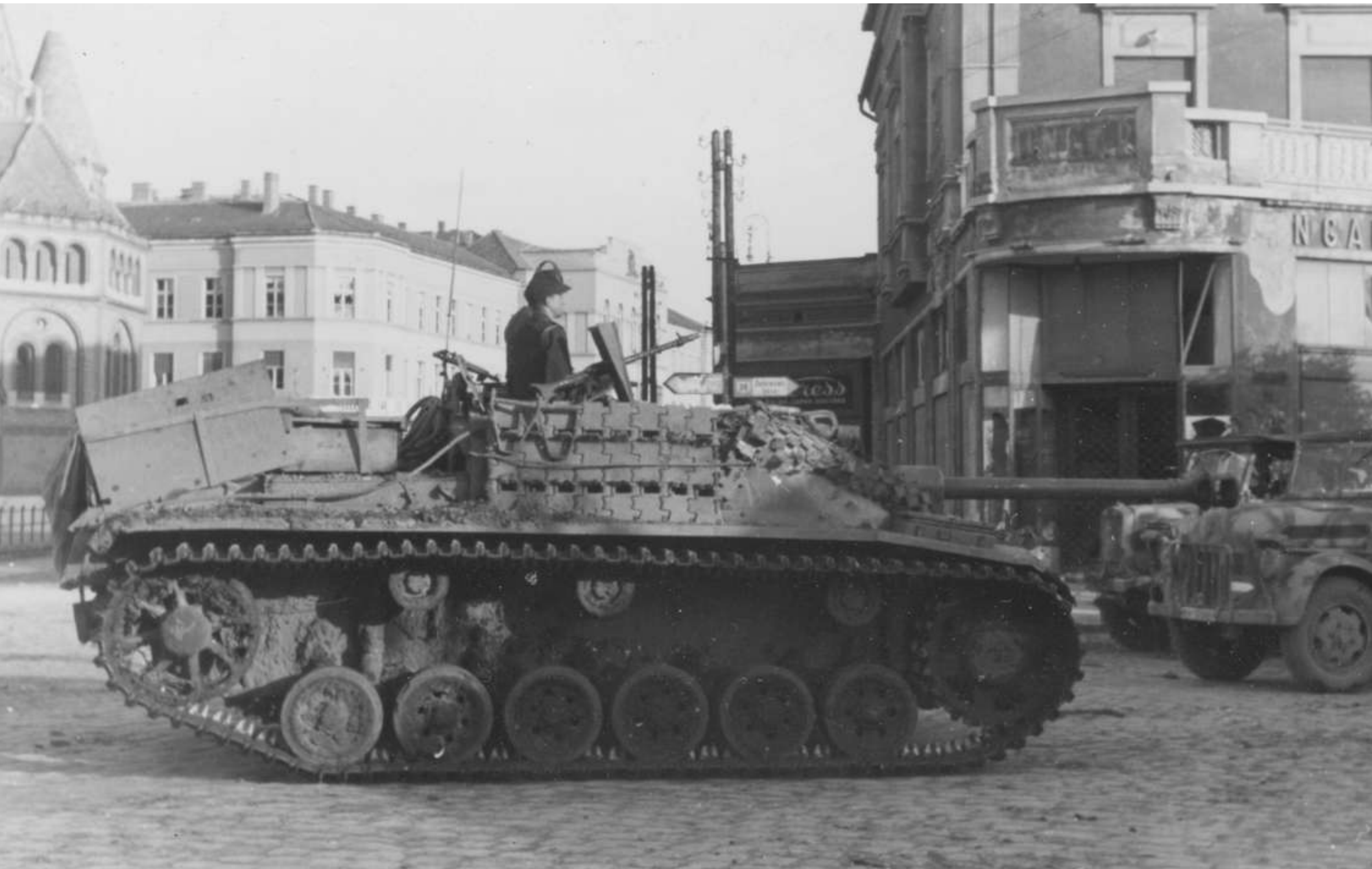
	PzKpfw II	PzKpfw III	PzKpfw IV	PzKpfw Panther	PzKpfw Tiger	StuG
Operational	26	136	562	226	242	1,319
In need of repair	5	58	84	66	65	261

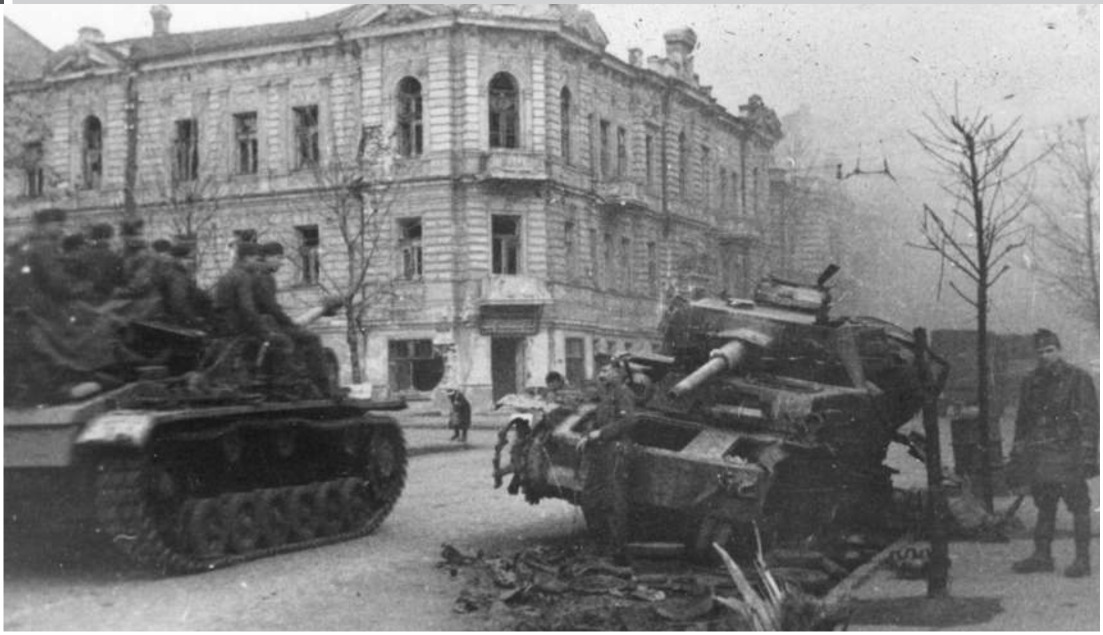
In June 1944, German tank forces in the east were very unequally distributed. Although the weakened forces of *Heeresgruppe Nord* had been able to halt the Soviet advance after retreating from Leningrad. The Red Army, deploying very strong formations, launched an attack on *Heeresgruppe Nordukraine* and *Südukraine*.

By mid-1944, German armoured forces had some 2,500 tanks. But a careful analysis reveals that more than half of this number were *Sturmgeschütz* (in StuGAbt; *Panzerjäger* units with infantry divisions and *Sturmgeschütz* detachments within Panzer divisions), and PzKpfw IV. It is interesting to note that at that time there were more Tiger heavy tanks operational than Panther medium tanks. Some 20 percent of the total number was undergoing repair.

The May 1944 issue of the instructional pamphlet *Nachrichten für die Panzertruppen* (bulletin for the armoured forces) featured a short article giving advice for entering combat with limited forces.

Below:
A *Sturmgeschütz* of an unknown unit moves through a battle-damaged area in Debrecen, the second largest city in Hungary, to join forces attempting to halt the Soviet advance. The vehicle is fitted with late-type *Ostketten* (winter tracks) and although it is not winter they did improve mobility. (Anderson)





Above:
A *Sturmgeschütz* loaded with infantry passes a totally destroyed PzKpfw IV, evidence of the very heavy fighting in and around Budapest. The Hungarian army, as part of the Axis, was supplied with arms and equipment (including tanks) by the Nazi government in Germany. (Anderson)

Some basic principles for leading and the training of tank units, from the commander of the *Panzertruppen* training schools.

1.) Keep whatever assets you have together. This becomes more important the less you have. Do not fiddle about on the edges of a battle; be prepared to make bold strikes.
2.) The more tanks you have, the greater your success will be … Avoid the commitment of a single Panzer, *Panzerjäger* or armoured half-track vehicle… If you have limited forces, concentrate them for pin-point attacks.
3.) Decide on a precise point for your main effort… Do not spread your heavy weapons amongst subordinate units… These heavy weapons are your most effective tool to create a point of main effort… Firstly, attack your point of main effort with heavy weapons, secondly use your infantry. This will save lives… smash the enemy brutally with the force of a blacksmith's hammer… If you only use several small hammers, you will only disturb the enemy, but he will not let you through.
4.) Make use of your entire force, when attacking on the move... Do not hold back any reserves. In the course of an assault you can relieve parts of your forces by creating your reserves. But do have the nerve to fight without reserves.
6.) Use all methods to achieve surprise… Attack at unusual times even at night. Tank crews will always be resolute on the attack … Do not attack front on, like infantry, aim your attack against the flanks and rear of the enemy.
7.) Learn from the Russian's ability to improvise. There is no such word as "impossible" for a *Panzermann*. Anything is possible.
8.) Your position as a leader is at the head of an attack. You can only direct your tanks by leading from the front.

German tank strength HG North and South Ukraine 15 June 1944

	PzKpfw II	PzKpfw II	PzKpfw III	PzKpfw IV	PzKpfw Panther	PzKpfw Tiger	StuG	Total
Operational	0	26	136	562	226	242	1,319	1,690
In need of repair	0	5	58	84	66	65	261	352

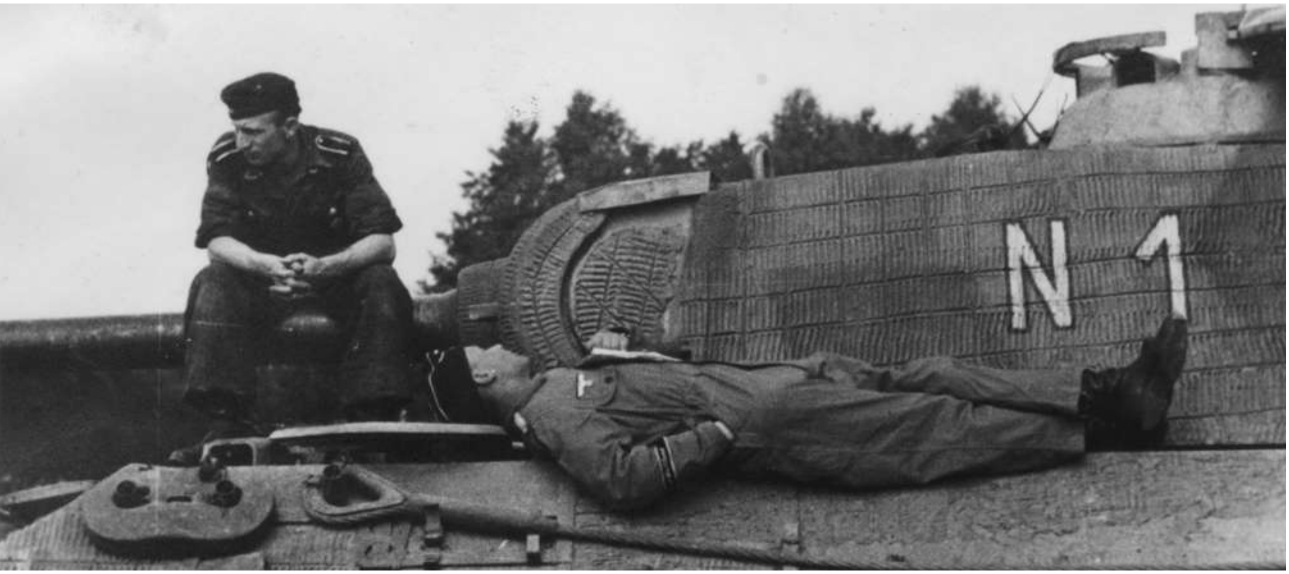
The use of markedly frank and informal language in this message is quite interesting and shows that the authorities were, apparently, attempting to find a personal approach to new soldiers. Nevertheless the article does highlight the lack of equipment for the *Panzerwaffe*. Although armament manufacturers had significantly increased production, there were never enough new tanks to replace losses on the battlefront.

Setback in the southern area of the eastern front

In February 1944, Soviet forces increased their pressure on the southern flank. German commanders then positioned the largest part of their available tank forces here in preparation for any offensive operations.

The Soviet's overall superiority in equipment and manpower meant that no defensive line could be held for long. At Kamianets-Podilskyi and Korsun large formations of German force had been surrounded; once again Hitler refused to give the order to retreat and insisted on the lines being held. However, in both cases his orders were finally ignored, but during the breakout German forces suffered heavy casualties.

Now both Hungary and Romania were threatened; Hitler ordered that the Hungarian government be dismissed to avoid them surrendering. However,



Below:
Zimmerit was a factory-applied coating, made from a mixture of cement and wood-fibre, to prevent enemy anti-tank teams attaching magnetic charges to the armour. Note field engineers have fabricated a rain guard for the gun mantlet. (Anderson)

A31

Left:
Two PzKpfw VI Tiger Ausf E from PzGrenDiv Grossdeutschland, move into defensive positions during the First Jassy-Kishinev Offensive (8 April to 6 June 1944), Romania. The unit was transferred to East Prussia in July 1944. (Getty)

Above:
In late 1944, PzRgt Grossdeutschland was sent to Lithuania as Soviet forces began to threaten German territory. A propaganda film unit closely followed the regiment as it engaged in many successful counterattacks, including the recapture of Vilkaiškis (Willkowischken), and later Šiauliai (Schaulen). (Anderson)

now pressed into hopeless defensive fighting, both countries were to prove to be less than reliable allies.

By May, the Crimea was totally under Soviet control, but now the spring *Raputitsa* (mud season) forced a short pause in the battle.

In early 1944, 24.PzDiv was involved in heavy defensive battles to the west of the river Dnieper. An after action report dated May 1944 details the deployment:

> Experience report:
>
> A.) General issues:
>
> 1.) Enemy actions
> As already reported; immediately after taking an area, the Soviets force civilians into front-line service without any training and often without a uniform. They equipped them with captured German weapons but with only five to 10 rounds of ammunition each.
> The main defence by the enemy against our attack is a concentration of anti-tank guns, which is established when an objective is reached… During his successful breakout from the Shyrokyne bridgehead the efficiency of his supply lines became evident. Airborne supply was carried out under any condition by landing on roads during the advance. During the mud season, the superior cross-country mobility of the T-34 over our tanks again became

Above:
Even when compared to the contemporary Russian tanks, the PzKpfw VI Ausf B Tiger II *Königstiger* (King Tiger) was a large vehicle. The type was armed with a very effective 8.8cm KwK 43 L/71 gun, but the JS-2 mounted a 122mm D-25T gun and was 20 tons lighter. However, when deployed in the hands of an experienced tank commander, the Tiger II was difficult to defeat. (Münch)

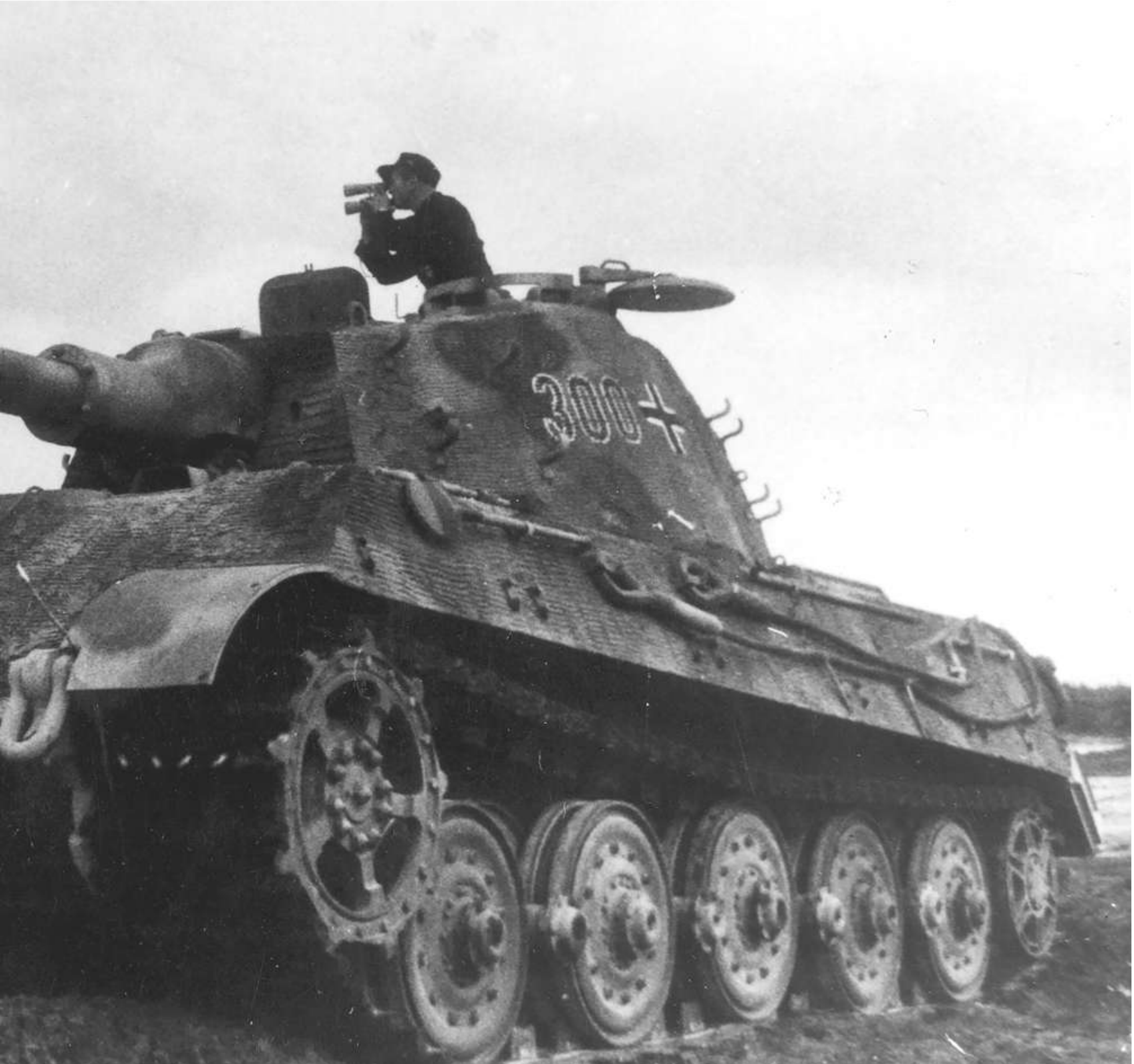
> evident [24.PzDiv had only PzKpfw IV and *Sturmgeschütz*]. While our tanks covered 2km, overloading their engines, the T-34 did not seem to be at all hindered by the mud.
>
> 2.) Tactical commitment
>
> a.) During to its commitment at the Nikopol bridgehead, the division was engaged in frontal counterattacks against enemy points of main effort. The recent fighting gave the division an opportunity to determine the direction of the attack and prepare for mobile warfare. Thus we were able to avoid the enemy's strong positions. The establishment of armoured combat groups consisting of tanks, self-propelled guns and armoured halftracks proved to be efficient… The latter saves lives.

These observations are not surprising as it was effective for the enemy to mass weapons such as anti-tank rifles and guns in a defensive line. Under normal circumstances, a well-functioning Panzer division would have attacked these gun positions with divisional artillery or, at closer range, by *Panzergrenadiere*. This particular Soviet tactic was poor; once the gun positions had been located they were destroyed with the loss of men and material, but not without heavy losses to German forces.

In March 1944, the Soviets prepared to launch a major offensive aimed at capturing the strategically important oil field at Ploesti. During the early stages of this offensive, German positions at Kirovograd came under heavy attack, and during the following battle PzGrenDiv *Grossdeutschland* was forced to retreat. The division was very well equipped; its PzRgt was formed of one Panther-equipped PzAbt, one PzKpfw IV-equipped PzAbt and one Tiger-equipped integral s PzAbt. The infantry elements were also strong; one *Panzergrenadier-Regiment* and a *Panzerfüsilier-Regiment*. A PzJägAbt, and a StuGAbt were also available and, when compared to other Panzer divisions, it was supported by a well-equipped artillery and FlaK detachments. When Soviet formations tried to encircle the division, commanders ordered it to move to the north where it succeeded in holding up the attack. However, robust Soviet pressure forced commanders to carefully plan a strategic retreat. By April, the unit had reached the town of Jassy on the bank of the river Prut. Here the division was ordered to stop the Russian advance, which had turned north but was now heading in south toward Jassy. The commander of PzGrenDiv Grossdeutschland, General Hasso von Manteuffel, wrote in his memoir of 1948:

Jassy and Targu-Frumos represented the gate to the Romanian mainland… I was sure that the possession of this area would block the access to the south, since the road to Jassy was the only one passable. The Russians had reached a part of this road … We were able to block this attack; the *Panzerfüsiliere* supported by the PzRgt and the *Sturmgeschütz* took control of the high ground… It was planned to only commit the division for defensive action.

Our reconnaissance analyzed aerial photographs, radio traffic and reports from scouting patrols. The results confirmed my assumption that the Soviets would take the route via Targu-Frumos to Jassy to reach Ploesti… I had to stay here, so I refused an invitation to the *Wolfsschanze* [Wolf's Lair – Hitler's headquarters in East Prussia].



Below:
A PzKpfw VI Tiger Ausf B is fitted with the narrow transport tracks and also has the track guards removed to allow ease of movement (passing traffic) during transfer by rail transport. (Getty)

Above:
A PzKpfw V Panther Ausf A from 1.PzDiv has received heavy damage during the fighting around Budapest in the winter of 1944/45. (Anderson)

The troops made preparations to face the Russian assault.

Terrain:
North of the line Targu-Frumos to Jassy, the terrain was passable for tanks and allowed a wide field of fire… The local ground cover allowed us to camouflage our infantry positions, heavy weapons and *Sturmgeschütz*.
Combat strength:
The combat strength and troop morale in PzGrenDiv Grossdeutschland was excellent. The troops felt far superior to the opponent. The division’s strength:

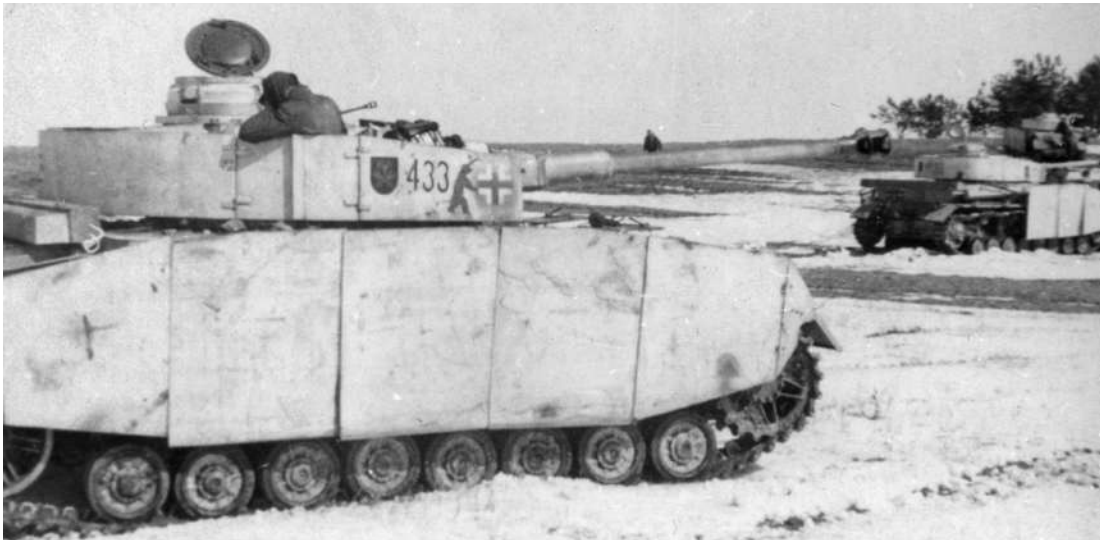
Two Infantry Regiments
One StuGAbt with approximately 40 *Sturmgeschütz*
One Pioneer battalion
One Reconnaissance battalion
One PzRgt with one Abt Panzer IV (approximately 40 tanks)
one Abt Panzer V (approximately 80 tanks)
one Abt Panzer VI (approximately 40 tanks)
one PzArtRgt with four fully-equipped battalions
one FlaK-Art battalion with three batteries 8.8cm guns

The division had sufficient stocks of ammunition and fuel.

Deployment:
Both infantry regiments were dug-in far ahead in deeply staggered positions. The StuGAbt was divided among other regiments. The pioneers, the reconnaissance battalion and the Panzer regiment were held back as divisional reserves. The PzArtRegt, fully replenished with ammunition, was distributed over the divisional sector.

The attack:
At 04:00hrs on 2 May 1944, a massive artillery barrage hit our forward positions. Our camouflage was good; we suffered only a few losses… An hour later, their tank assault commenced. Our tanks had been moved toward Targu-Frumos. The infantry in their trenches, ducked-down and let the tanks roll over leaving them open to fire from the dug-in 8.8cm FlaK-Abt. The majority of the attacking tanks, approximately 25, were destroyed.The rest reached the assembly position of our tanks and were subsequently destroyed.
Since I expected the main assault from the area northwest of Targu-Frumos, I ordered the PzRgt to high ground overlooking the city, where a battery *Sturmgeschütz* lay in well-camouflaged positions… As I drove to this position, 30 Russian tanks launched an attack. The *Sturmgeschütz* opened fire at a range of 300m and knocked-out all the enemy tanks. We had no losses.
Now the Russians attacked with wave after wave of tanks, many of which were destroyed and the assault was repelled. I was talking to the commander of the PzRgt, when very heavy fire landed on our position. At first we regarded this as friendly fire from our Tiger tanks. However, we quickly learned that this came from Russian tanks from a range of 3,000m. Such heavily-armed tanks were previously unknown to us. We ordered a Tiger-company to move up, and open fire on these tanks. Hits were clearly visible, but most ricocheted off their

Below:
A PzKpfw IV from PzRgt 35 fitted with a full set of *Panzerschürzen* (side skirts). These were introduced in 1943 to provide extra protection against Soviet anti-tank rifle fire. Although it has been camouflaged with white-wash paint the divisional marking for 4.PzDiv and turret number have been left clear. (Anderson)



Right:
In February 1944, PzRgt 27 equipped with Panzer IV tanks was part of 19.PzDiv holding defensive positions in south-west Russia. A *Sturmgeschütz* formation was often integrated with a tank unit, to provide the spearhead for any attack; their flanks would be guarded by the tanks. (Bundesarchiv)

> armour. The commander of the Tigers ordered the attack, and they opened fire at a range of 2,000 to 1,800m. Four enemy tanks were destroyed, and three retreated. I ordered a PzKpfw IV company to chase the heavy tanks… These agile little tanks were indeed able to approach to within 1,000m where they opened fire into the rear of the retreating tanks and destroyed them.
>
> By 11:00hrs, the Panzer regiment had destroyed some 250 tanks around the dug-in position system of our infantry... In the meantime the *Füsilierregiment* was running low on ammunition and fuel. I collected a PzKpfw IV company and drove to the regiment through the continuing battle. Our tanks managed to destroy 30 enemy tanks.
>
> On 2 May, "*Schlachtflieger*" (ground-attack aircraft), among them Stuka dive-bombers from Rudel's squadron, made repeated attacks on the enemy. These forces gave precious support by attacking the enemy's infantry and artillery held in rear positions.
>
> Our own losses were less than 10 tanks, however many more were damaged. This was a success of immense importance; the breakthrough to Ploesti had been halted at an enormous cost to the enemy in personnel and equipment.

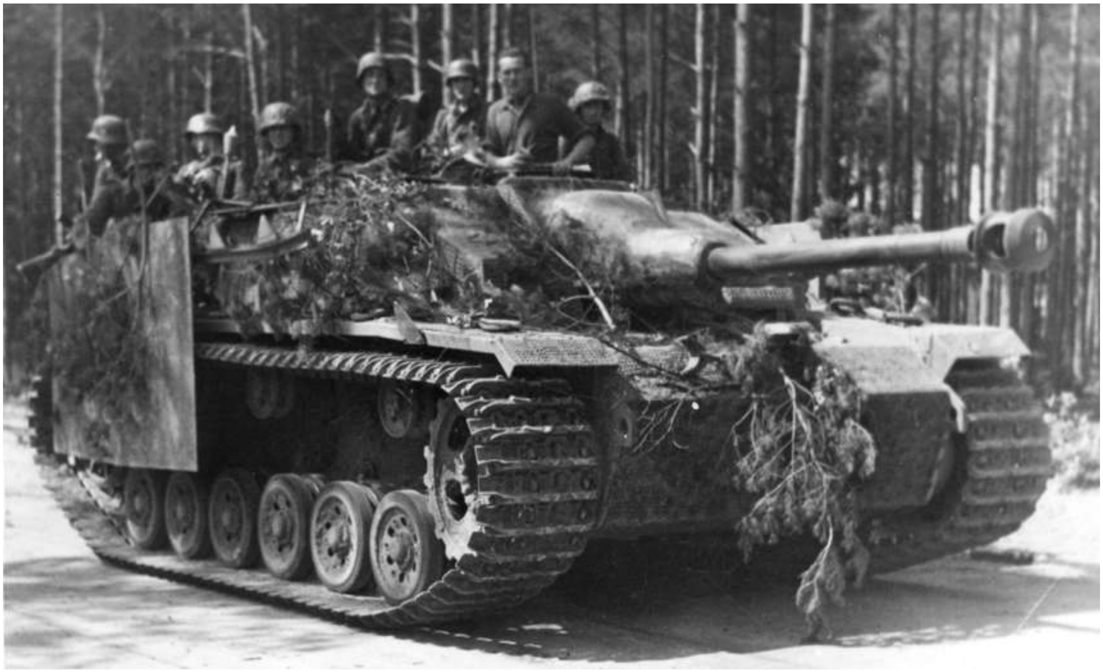
This rather subjective report was written from memory after the war by General Hasso von Manteuffel, but it nevertheless gives a good impression of the fighting in Romania; however the situations he describes were the absolute exception. General von Manteuffel was able to use intelligence

German tank strength *Heeresgruppe Mitte*, 15 June 1944						
	PzKpfw II	PzKpfw III	PzKpfw IV	PzKpfw Panther	PzKpfw Tiger	StuG
Operational	26	22	8	0	29	404
In need of repair	3	2	9	0	0	76

gathered from a number of sources to assess the intentions, the forces and correctly predict the direction of the enemy's opening attack. His PzGrenDiv Grossdeutschland was at the peak of its operational readiness and had a more than adequate supply of fuel and ammunition. General von Manteuffel had succeeded in performing a tactical masterpiece by employing proven combat principles.

Bagration – the final turning point

In June 1944, *Heeresgruppe Mitte* (Army Group Centre) was defensively in an unfavourable position, as it had only two Panzer units available, 20.PzDiv and s PzAbt 501 and was forced to rely on various infantry divisions, among them 78.*Sturmdivision*, PzGrenDiv Feldherrnhalle, 25.PzGrenDiv and six StuG brigades. The table (below) shows the disproportion of conventional tanks to *Sturmgeschütz*. As a result, *Heeresgruppe Mitte* was absolutely unable to launch any offensive operations and concentrated on establishing defensive positions.



Above:
A *Sturmgeschütz* of StuGAbt 189 (the unit was permanently subordinated to 78.StuDiv) is fitted with *Ostketten*, essential for the *Rasputitsa* (sea of mud) left after the heavy rain of summer and autumn. Note the late-type attachment brackets for the *Panzerschürzen*. (Anderson)

The Soviets had been planning a major offensive over a long period of time. On both the northern and southern parts of the front an offensive had been started with encouraging results; Leningrad and the Crimea had been liberated. These victories had a tremendous impact on the morale of not only Soviet troops, but also the people of Mother Russia.

On 22 June 1944 *Operatsiya* (Operation) *Bagration* began when Soviet forces opened their attack with a very heavy artillery bombardment which lasted for around two hours. Some 170 guns were positioned along each kilometre in front of the places selected to break through German defensive positions. These were blown wide open and the defending forces became so dispersed that a counterattack was not feasible. Wherever possible, German units evaded the fearsome impact of the assault and attempted to make a hastily-planned controlled retreat, or simply fled to the west. Any remaining pockets of resistance were surrounded and eliminated by Soviet forces.

In the attack, 28 out of 38 German divisions were annihilated, a total of three entire armies.

After this disaster, the tank officer at the General Staff attempted to analyze the reasons for this sudden and effective attack. His letter was distributed to all army groups, except *Heeresgruppe Mitte:*

> To my present knowledge, the success of our opponent in the middle section of the front is based on the following points.

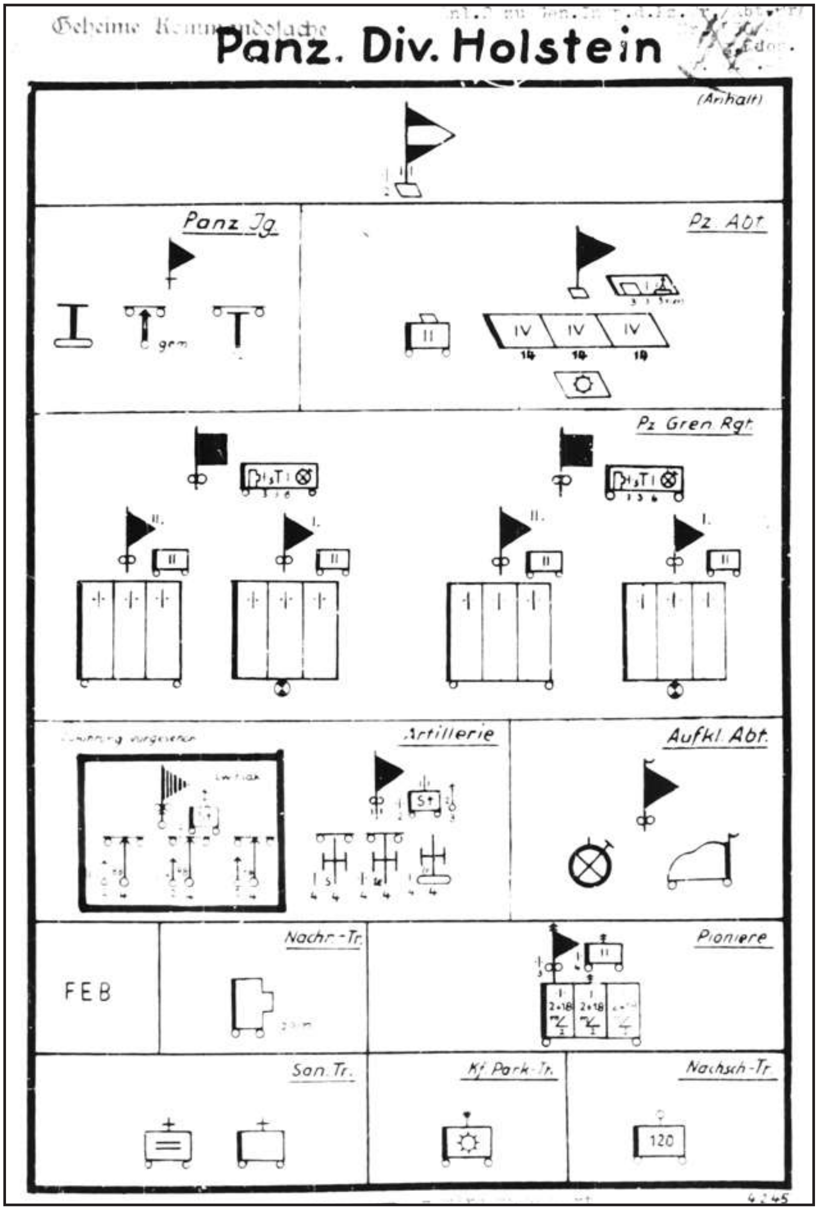
1.) Considerable improvement in the deployment of artillery: The enemy weapons were effectively concentrated to knock-out our artillery and to strengthen the defence… The leadership was skillful and adept. All weapons were quickly moved forward.
    Counter measures: Rapid repositioning of our artillery, increased usage of mobile guns and batteries… If an attack is foreseen, all batteries should be moved to new positions.
2.) The usage of *Schlachtflieger* [ground-attack aircraft] was effectively concentrated following combat profiles developed by Allied air forces combat… During the day our artillery was effectively neutralized, and any attempt to move reserves was impeded.
    Counter measures: All movements by motorized transport should take place during darkness. Fight with ALL weapons… increase the use of camouflage.
3.) Commitment of enemy tanks: Reduced numbers were used during the opening phase of the attack. After successfully breaking through our positions massed tank units were deployed across a broad front.
    Counter measures: Deeply stagger our anti-tank gun positions. Establish alternative anti-tank defences (obstacles, mines, ditches).
4.) Contingency planning: The enemy no longer stops after reaching his objective, but continues to advance disregarding any threats to his flanks.
    Counter measures: Forward-thinking before committing own reserves.

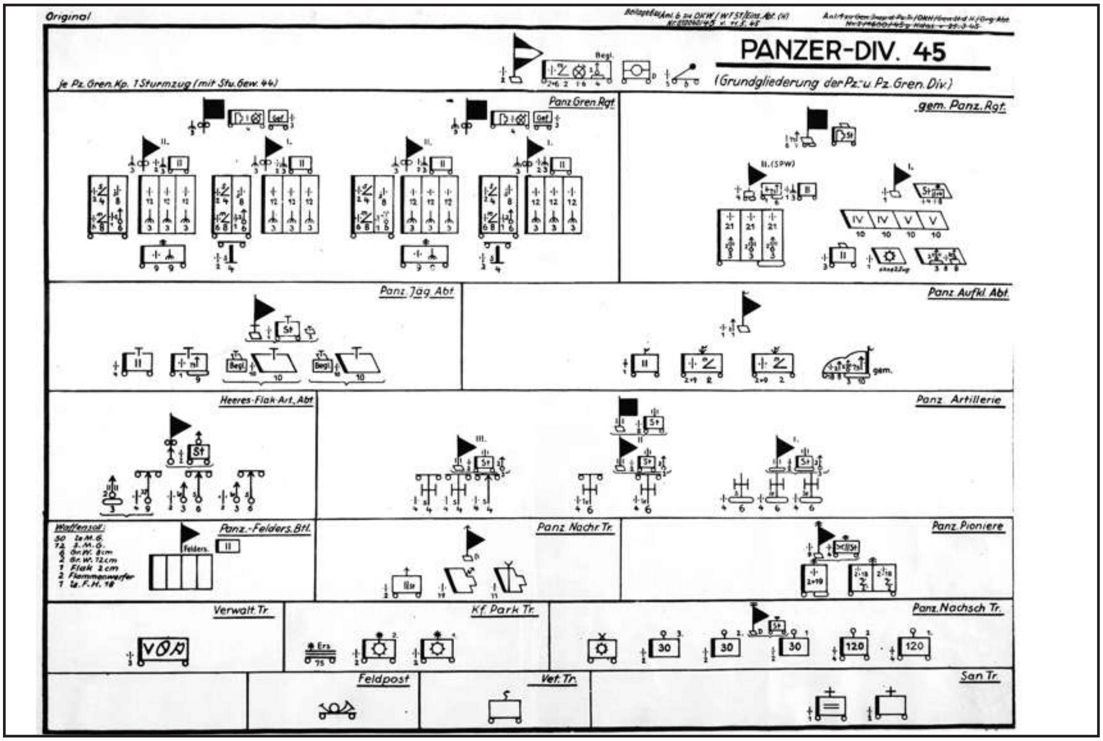
The officer did not recognize, or perhaps did not want to acknowledge, that the Soviets now fully understood German principles for strategic and tactical combat; they were now eminently capable of planning and performing their own method of warfare. To defend such a large-scale offensive threat would have required a 1941-style *Wehrmacht* with a full

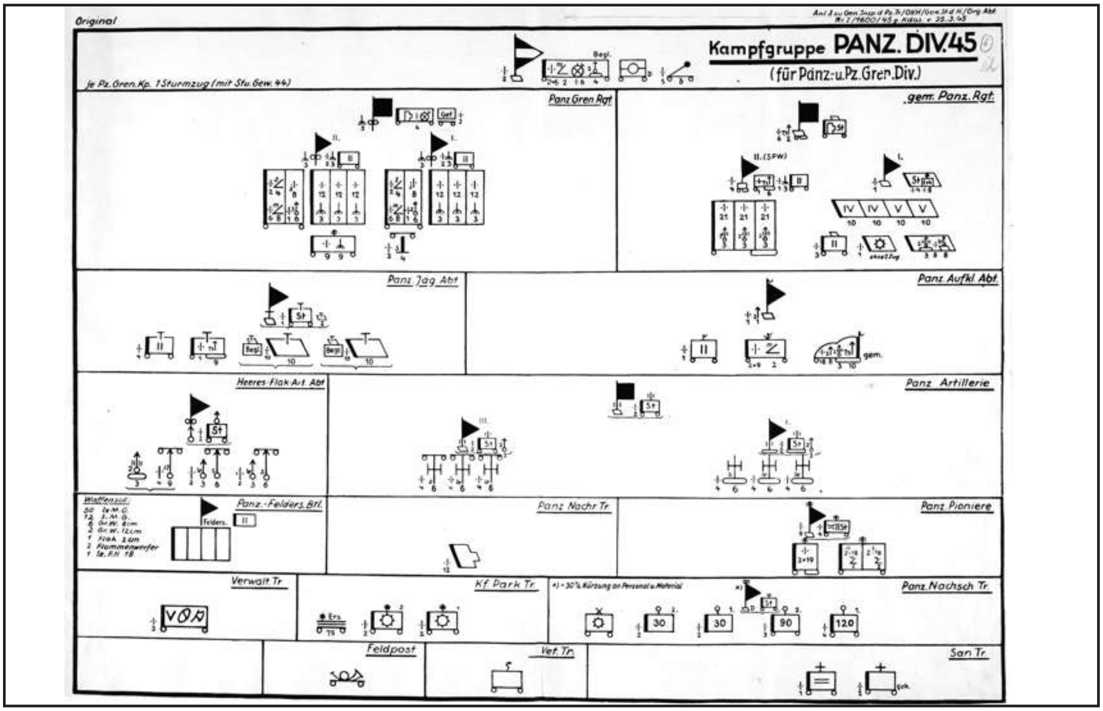
Below:
A PzKpfw V Panther Ausf G follows vehicles from the workshop section, which includes a number of *Bergepanther*. This highly-valued armoured recovery vehicle was built on the chassis of early PzKpfw V Ausf D (270 completed) to meet an urgent demand for a vehicle powerful enough to recover the heavy tanks then in service. (NARA)

complement of Panzer divisions, supported by an effective *Luftwaffe* and a plan which covered all contingencies. The German army of mid-1944 was now a mere shadow of what it had been in 1939.

After Operation *Bagration*, the Soviets continued their advance and forced a wedge between the remnants of *Heeresgruppe Mitte* and *Heeresgruppe Nord*: in the following fighting *Mitte* ceased to exist. The remaining units were now fighting in western Prussia and Pomerania.


Geheime Kommandosache
Panz. Div. Holstein
(Anhalt)
Panz Jg.
gem
Pz. Abt
II
IV
IV
IV
14
14
14
Pz Gren Rgt.
II.
I.
II.
I.
II
Artillerie
Aufkl. Abt.
St
FEB
Nachr.-Tr.
Pioniere
2+18
2+18
San. Tr.
Kf. Park-Tr.
Nachsch-Tr.
120
4.2.45


Original
PANZER-DIV. 45
(Grundgliederung der Pz.-u. Pz. Gren. Div.)
je Pz. Gren. Kp. 1 Sturmzug (mit Stu. Gew. 44)
Begl.
Panz. Gren. Rgt.
gem. Panz. Rgt.
II. (SPW)
St
Panz. Jäg. Abt.
Panz. Aufkl. Abt.
gem.
Heeres-Flak-Art. Abt.
Panz. Artillerie
Waffensoll:
50 le. M.G.
72 s. M.G.
6 Gr. W. 8 cm
2 Gr. W. 12 cm
1 Flak 2 cm
2 Flammenwerfer
1 le. F.H. 18
Panz.-Felders. Btl.
Felders.
Panz. Nachr. Tr.
Panz. Pioniere
Verwalt. Tr.
Kf. Park Tr.
Ers.
Panz. Nachsch. Tr.
Feldpost
Vet. Tr.
San. Tr.


Original
Kampfgruppe PANZ. DIV. 45
(für Panz.-u. Pz. Gren. Div.)
je Pz. Gren. Kp. 1 Sturmzug (mit Stu. Gew. 44)
Begl.
Panz. Gren. Rgt.
gem. Panz. Rgt.
II. (SPW)
St
Panz. Jäg. Abt.
Panz. Aufkl. Abt.
gem.
Heeres-Flak-Art. Abt.
Panz. Artillerie
Waffensoll:
50 le. M.G.
72 s. M.G.
6 Gr. W. 8 cm
2 Gr. W. 12 cm
1 Flak 2 cm
2 Flammenwerfer
1 le. F.H. 18
Panz.-Felders. Btl.
Felders.
Panz. Nachr. Tr.
Panz. Pioniere
Verwalt. Tr.
Kf. Park Tr.
Ers.
*) = 30% Kürzung an Personal u. Material
Panz. Nachsch. Tr.
Feldpost
Vet. Tr.
San. Tr.

Right:
A common scene across occupied Europe, after Germany surrendered in May 1945. Here a column of German troops, somewhere in central Germany, await instructions for disarming and dispersal. The only armoured vehicle visible is a Panzer IV/70. (Anderson)

Last organizational changes

In 1945, German armaments industry was working at full capacity and this allowed a few new Panzer units to be established. After the failed inception of new Panzer brigades in mid-1944 (only short time later, most had been integrated into exhausted Panzer divisions), the G*eneralinspecktur der Panzertruppe* proved unable to assemble units with the same or at least comparable combat strength as in earlier divisions.

There was no standardization, and any available equipment was used to establish a new unit. For instance, *Panzerdivision* Holstein (named after a region in northern German) was formed on 1 February 1945, and was then immediately sent to *Heeresgruppe Weichsel* fighting on the eastern front some 300km from Berlin.

The division was made up of a *Panzerabteilung* with three companies each with 14 PzKpfw IV, an under-manned armoured infantry regiment supported by poorly equipped integrated artillery and anti-aircraft elements. Equipment and personnel for the division were gathered from various replacement units; ultimately their combat value was poor.

PzDiv 45

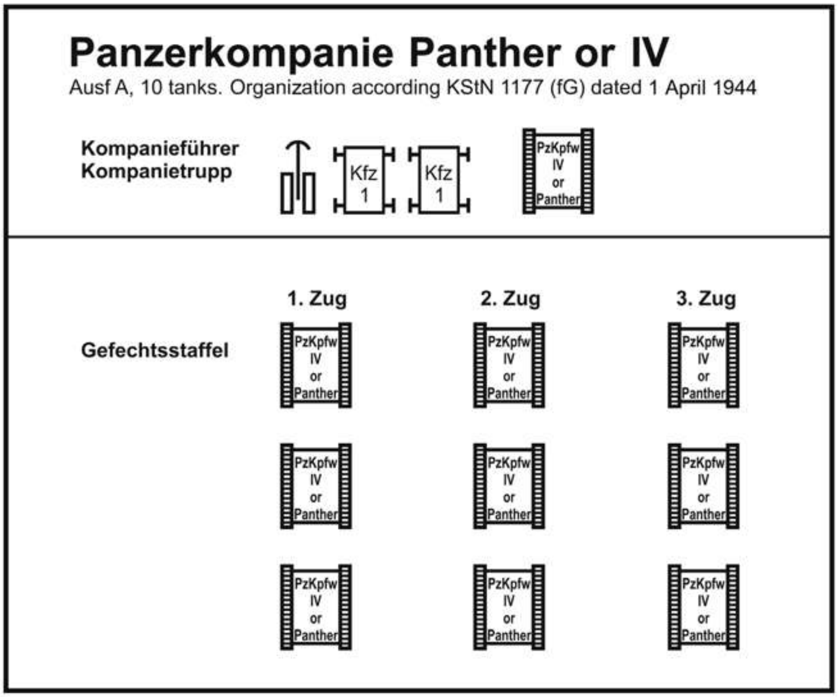
On a smaller scale, the *Generalinspektur der Panzertruppe* published a notice in the February 1945 issue of the *Nachrichtenblatt der Panzertruppe*:

> Based on troop experiences, and by adapting to the personnel and equipment situation, all KStN with "*freie Gliederung*" (unrestricted structure) for Panzer and *Panzergrenadier* divisions and army troops will be revised; new versions dated 1 November 1944, will be published. On publication of the new KStN all previous versions dated 1 April 1944 will be cancelled.

This announcement was possibly made in preparation for a further major change. Reflecting the general situation, on 25 March 1945, the *Generalinspektur der Panzertruppe* ordered a totally new command structure for the *Panzertruppe*: Panzer Division 45 (PzDiv 45).

This new structure was formed with the knowledge of what truly faced the German military. The country's war economy was in a parlous state having slowly reached a point where coordination did not exist. Even when new tanks were available, there was always a shortage of fuel; when this was available transportation became a problem as railway lines and junctions had been destroyed by enemy action. If the new tanks did reach the frontline their crews were faced with a lack of ammunition, spare parts and, of course, fuel. Recovery teams lacked heavy equipment and workshop units had to carry out repairs and maintenance in the field.

In simple terms, PzDiv 45 had been prepared so that it was valid for both tank and armoured infantry units (Panzer and Panzergrenadier divisions), and did not differentiate. The new structure had a *gemischtes Panzerregiment*


Panzerkompanie Panther or IV
Ausf A, 10 tanks. Organization according KStN 1177 (fG) dated 1 April 1944
Kompanieführer
Kompanietrupp
Kfz 1
Kfz 1
PzKpfw IV or Panther
1. Zug
2. Zug
3. Zug
Gefechtsstaffel
PzKpfw IV or Panther

(combined tank regiment), made up of a *Panzerabteilung* (with reduced allotment of 10 tanks in each company, see table) and a PzGrenBtl (armoured halftracks); the combat value of the tank detachment was significantly weakened. However, the PzGrenBtl was well equipped with SdKfz 251/21 (1.5cm or 2cm MG 151 in a triple mounting) for anti-aircraft defence and SdKfz 251/9 (7.5cm K51 L/24 gun). The *Panzerjäger* detachment was strong having two companies each with 10 Panzer IV/70, or *Panzerjäger* 38(t) or *Sturmgeschütz* with supporting grenadier platoons.

Importantly, only a few units were organized, restructured or equipped as detailed in this new structure. Realizing the many problems he faced, the *Generalinspektur der Panzertruppe* decided to scale-down the structure to *Kampfgruppe* (combat group) PzDiv 45, to enable poorly-equipped units to be restructured. This new document must only be regarded as an approximate guide. Faced with limited resources, the armoured infantry elements, the reconnaissance and communication unit and the artillery detachment were significantly reduced.

Panzerkompanie Panther or PzKpfw IV

The organizational structures of the subunits were adapted to those of PzDiv 45. For example, KStN 1177 dated 1 November 1944 (*mittlere Panzerkompanie* Panther or IV) was originally authorized to have 14 or 17 tanks. It is interesting to note that beside the PzKpfw V Panther and the PzKpfw IV, it also listed the

Panzer IV/70 as alternative equipment. It was not regular practice to issue the latter to a Panzer division, they were normally allocated to *Sturmgeschütz* and *Panzerjäger* units, and also Panzer brigades.

KStN 1177, dated November 1944, is the only structure available which shows a subsequent amendment. For PzDiv 45, a modified structure, noted as Ausf A was issued, which showed a reduced allotment of tanks.

1.PzDiv, a beacon for the *Panzertruppe* decline

A Panzer division of 1940 comprised of two tank regiments, each with two tank battalions. The proud 1.PzDiv, an elite unit during the invasion of France with a complement of more than 250 tanks, is a perfect example. Although some parts of the inventory were of little combat value, this unit was a significant fighting force

Before Operation Barbarossa a miraculous increase in the number of tanks units available occurred. When 1.PzDiv advanced east to Leningrad in 1941, the unit had delivered its PzRgt 2 to the newly established 16.PzDiv, but this reduced its number of available tanks to 150.

Three years later, in August 1944, 1.PzDiv was part of *Heeresgruppe Süd* fighting in the Carpathian Mountains. At that time statistics produced by the *Generalinspektur der Panzertruppe* showed an authorized strength of 78 PzKpfw IV, 73 Panther and 31 *Sturmgeschütz*. However, only 10 PzKpfw IV, five Panther and three StuG were reported to be ready for action.

As the war progressed, 1.PzDiv was pushed back through Hungary into Austria after a series of battles. On 1 April, the unit reported that it had four Panther and six unspecified *Beutepanzer* (captured tanks) operational.

Below:
A PzKpfw VI Tiger Ausf E lies abandoned among the skeletal remains of trees in Tiergarten Park. In the background the 'Red Banner' of the Soviet Union flies over the *Brandenburger Tor* (Brandenburg Gate) in May 1945. (Ullstein)

CONCLUSION

THE END OF THE *PANZERWAFFE*

On 23 August 1944, Romania signed an armistice with the Soviet Union and by 31 August elements of the Red Army, supported by their new allies, captured the Ploesti oil fields. In the following months, the German occupiers were forced to leave Greece, and were being pushed back in the Balkans. On 20 November 1944, Belgrade was liberated.

In Hungary, Soviet tanks entered Budapest on 2 November 1944 and by 29 November had crossed the river Danube and succeeded in breaking through German lines in the south of the country.

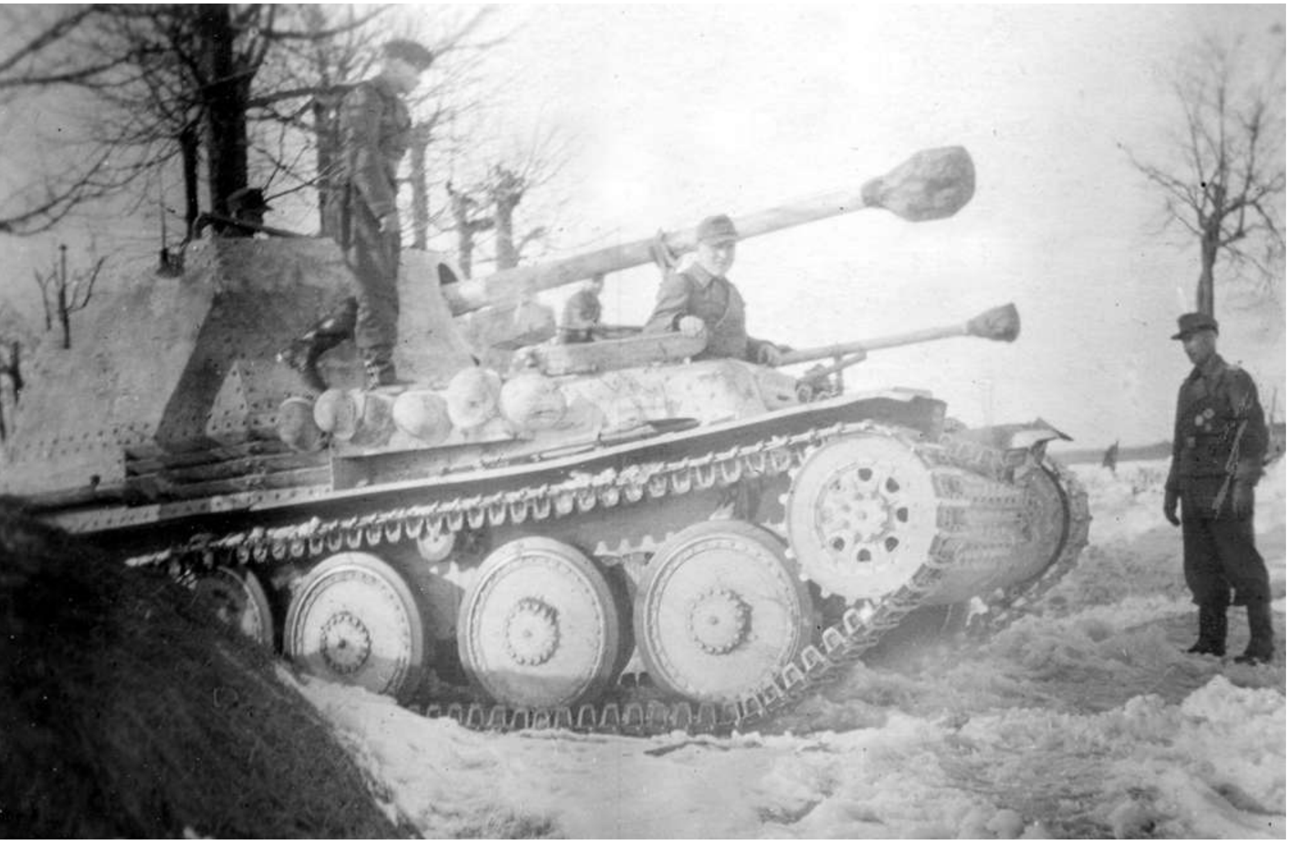
In Hungary, Soviet tanks entered Budapest on 2 November 1944 and by 29 November had crossed the river Danube and succeeded in breaking through German lines in the south of the country.

In October 1944 *Heeresgruppe Kurland*, formed of 16.Army and 18.Army, had become trapped on the Courland Peninsula, Latvia. Despite being isolated, the German defenders faced the Red Army in six major battles, from 15 October 1944 to 4 April 1945, but remained undefeated.

Although Heinz Guderian, and other leading officers vigorously opposed this plan as they preferred to reinforce the defences of Berlin, *Unternehmen Frühlingserwachen* (Operation Spring Awakening) to capture oil fields in the vicinity of Lake Balaton was launched on 6 March 1945. The 6.Army, commanded by *Oberstgruppenführer* Sepp Dietrich, supported by 6.SS-Panzer Army, was sent to Hungary, but the operation was unsuccessful and on 22 March the forces retreated to near Vienna.

During March, Allied forces pressed forward their advance at all costs. On 22 March 1945, Cologne was captured by US troops, and Soviet forces had reached the Baltic Sea near Kolberg (Kolobrzeg). Defeat was inevitable.

Left:
Major Josef Rettemeier addresses his troops as he takes command of 1.Div Panzer Lehr Rgt 130 at the *Panzergruppenschule* Bergen-Belsen in autumn 1944. In the background are newly-delivered PzKpfw V Panther Ausf G; note the attachment brackets for infra-red (IR) searchlights on the mantlets of each gun. (Anderson)



Above:
German infantry divisions were equipped with self-propelled tank destroyers including the SdKfz 138 *Marder* (Marten) III Ausf M. The type was armed with the powerful 7.5cm PaK 40/3 L/46. (Zöllner)

Left:
The crew of a PzKpfw IV from 116.PzDiv load ammunition in preparation for a last offensive against Allied forces in the west. Although they have hastily camouflaged their vehicle with branches and rubble. (Anderson)

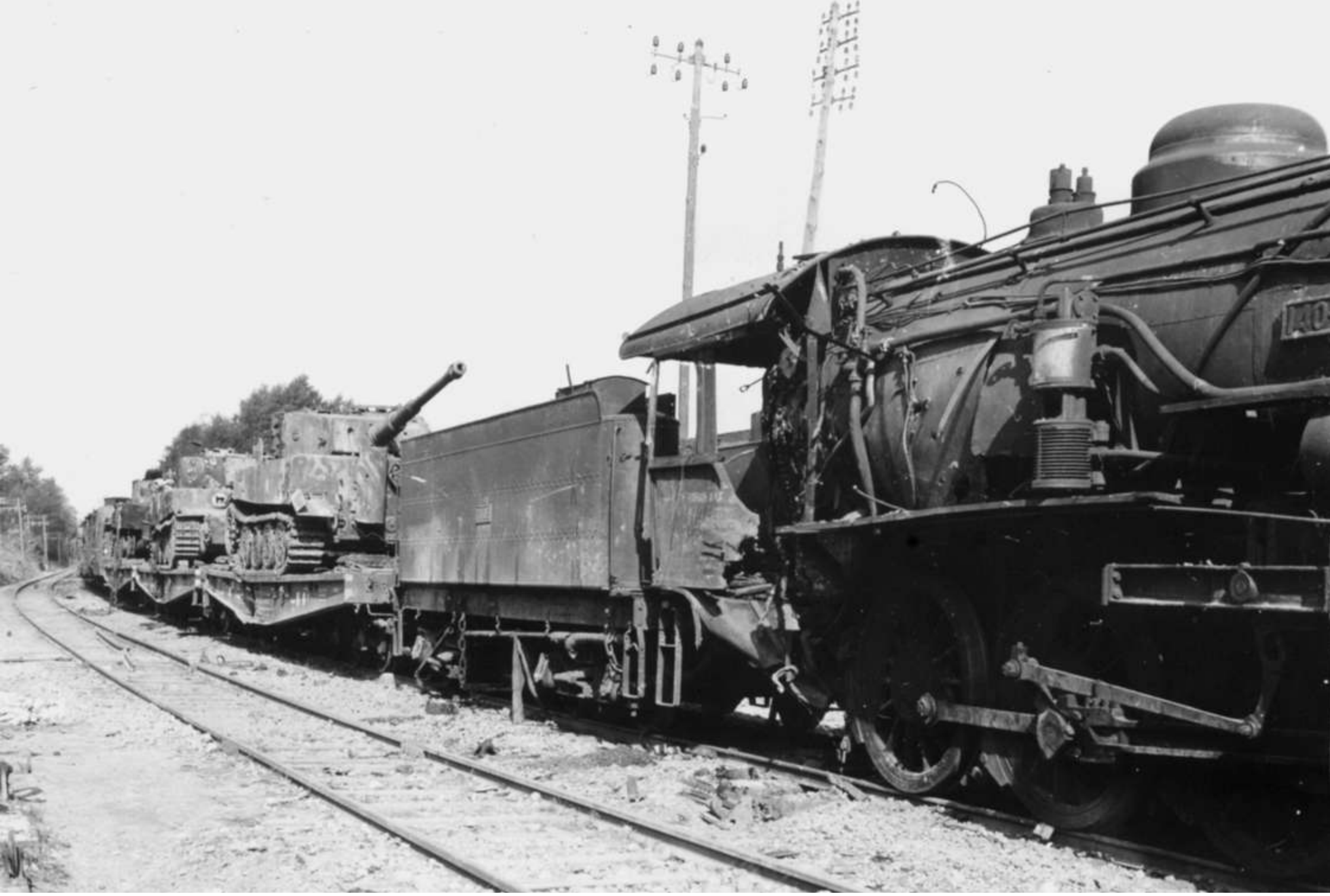
By 30 April 1945, Berlin had been surrounded by Soviet troops; a force which included over 6,000 tanks.

By 7 May 1945, the unconditional surrender was signed by General Alfred Jodl. After almost six years the war was over: The *Wehrmacht*, and with it the proud *Panzerwaffe* ceased to exist.

A war of tanks

Current writings by historians, and to an even greater the subjective opinions of military enthusiasts, consider World War II as a mechanized war. Tanks were the armoured spearheads which led the advance of the German invaders deep into Poland in 1939 and into the Low Countries and France in 1940. Commanders of the defending forces on both battlefronts proved unable to understand German tactics, and thus unable to halt the lightning advance.

The German commitment was so different to the current doctrine of a slow-moving infantry supported by tanks; their rapid moving Panzers were always concentrated against weak points in a defensive line, and after achieving a successful breakthrough, would fan out to attack the defenders from the rear, or



Above:
A French locomotive hauling a train-load of PzKpfw VI Tigers to reinforce units fighting in Normandy, during the summer of 1944 has been halted by a hit from a ground-attack aircraft. Allied troops arrived and captured the tanks before they could be unloaded. (NARA)

continue to advance. Speed, speed and even more speed, was their key for battle success: The strategy became known as the '*Blitzkrieg*'.

Over the next two years, German formations continued to use the same tactics with much success. The term Panzer would soon find its way in to the vocabulary of many armies around the world.

When the first battles were lost in North Africa, and after an entire army perished at Stalingrad, a deeper truth emerged. The German Panzers were no longer the battle-deciding wonder weapon, they remained powerful assets only when integrated with other forces. On the tactical level, Panzer commanders launched their attack after the battleground had been cleared by an artillery bombardment or by the *Luftwaffe*. The advance would be supported by pioneers and grenadiers, also attached artillery units to destroy any remaining enemy gun positions, and *Sturmgeschütz* to guard the flanks of the attack. If available, reserves were held back until required.

That was the approach in theory.

It is human nature for man to learn from experience. Allied forces had been the first to change their tactics to face the *Panzerwaffe*. Furthermore they made best use of their economic power and vast industrial resources, which gave them the means to drive the Germans out of North Africa, Sicily, Italy and then to invade Europe on 6 June 1944.

The Soviet side need far longer: Their solution to the German assault was to throw masses of infantry supported by massed tanks into the battle which resulted in an enormous loss of lives and equipment.

From October 1943, Germany was ultimately forced onto the defensive. The massive military superiority of Allied forces and the Soviet Union, combined with a failing logistic and industrial situation in Germany would shorten the war. The more the *Wehrmacht* was pushed back the more equipment was lost and this could not be easily replaced due to the damage caused to German industry (and the population) by the strategic bombing campaign flown by Allied air forces.

The last resort by German commanders to halt the Allied advance was to form *Volkssturm* units recruited from young boys who were still at school and old men. They received little or no training and were poorly equipped.

The might of the *Panzerwaffe*, created as the decisive weapon for a military leader, had faded to a mere shadow as the number of operational tanks available approached zero, damaged tanks could not be repaired, and those tanks at the front lacked fuel and ammunition.

The end of the war left no place for illusions, but apparently has left a breeding ground for myths.

Below:
Two PzKpfw V Panther tanks of 3.SS-PzDiv Totenkopf parked in defensive positons to cover the main street of a small town. The white skull emblem used by the unit has been painted next to the apperture for the bow *Maschinengewehr* (MG) 34. Most of the technical problems with the Panther had been solved by 1944, and it became the most versatile tank of World War II. (Anderson)

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